

1 **Supplementary Information**

2 **Multivariate Analyses of Codon Usage of SARS-CoV-2 and other betacoronaviruses**

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## 10 Supplementary Method

### 11 $\chi^2$ distance in CA

12 The  $\chi^2$  distance<sup>1</sup> between sequences (rows) was calculated as:

$$13 \quad d^2(X_i, X_{i'}) = n_{++} \sum_{j=1}^J \left( \frac{r_{ij}}{\sqrt{n_{+j}}} - \frac{r_{i'j}}{\sqrt{n_{+j}}} \right)^2$$

$$14 \quad r_{ij} = \frac{n_{ij}}{n_{i+}}$$

$$15 \quad r_{i'j} = \frac{n_{i'j}}{n_{i'+}}$$

16 where  $X_i$  is the  $i^{th}$  row variable in the  $i \times j$  contingency table. The count of the  $j^{th}$  codon for the  $i^{th}$   
17 sequence is noted  $n_{ij}$ . The row and column marginal totals are noted  $n_{i+}$  and  $n_{+j}$  respectively. The total  
18 number of observations is  $n_{++}$ .

### 20 Block structure in WCA

21 The Pearson residuals  $y_{ij}$  applied in CA was calculated as:

$$22 \quad y_{ij} = \frac{P_{ij}}{P_{i+} \times P_{+j}} - 1$$

$$23 \quad P_{ij} = \frac{n_{ij}}{n_{++}}$$

$$24 \quad P_{i+} = \frac{n_{i+}}{n_{++}}$$

$$25 \quad P_{+j} = \frac{n_{+j}}{n_{++}}$$

26  
27 While the  $y_{ij}$  applied in WCA was adjusted to the amino acid “block structure” by centering the data in each  
28 block based upon the value of codons that encode a particular amino acid:

$$29 \quad y_{ij} (WCA) = y_{ij} - \left( \frac{\sum_{j=a} y_{ij} \times P_{+j}}{\sum_{j=a} P_{+j}} \right)$$

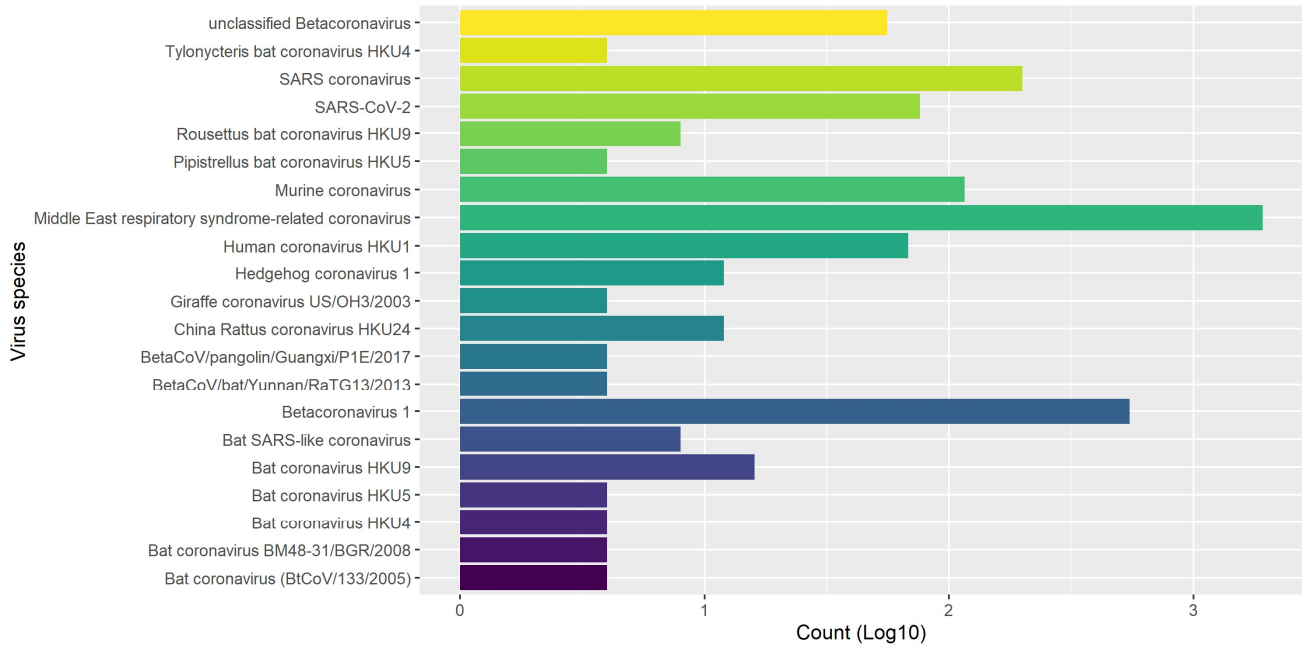
30 Where codons  $j$  all encode for the same amino acid  $a$ .

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32 **Supplementary Figures**

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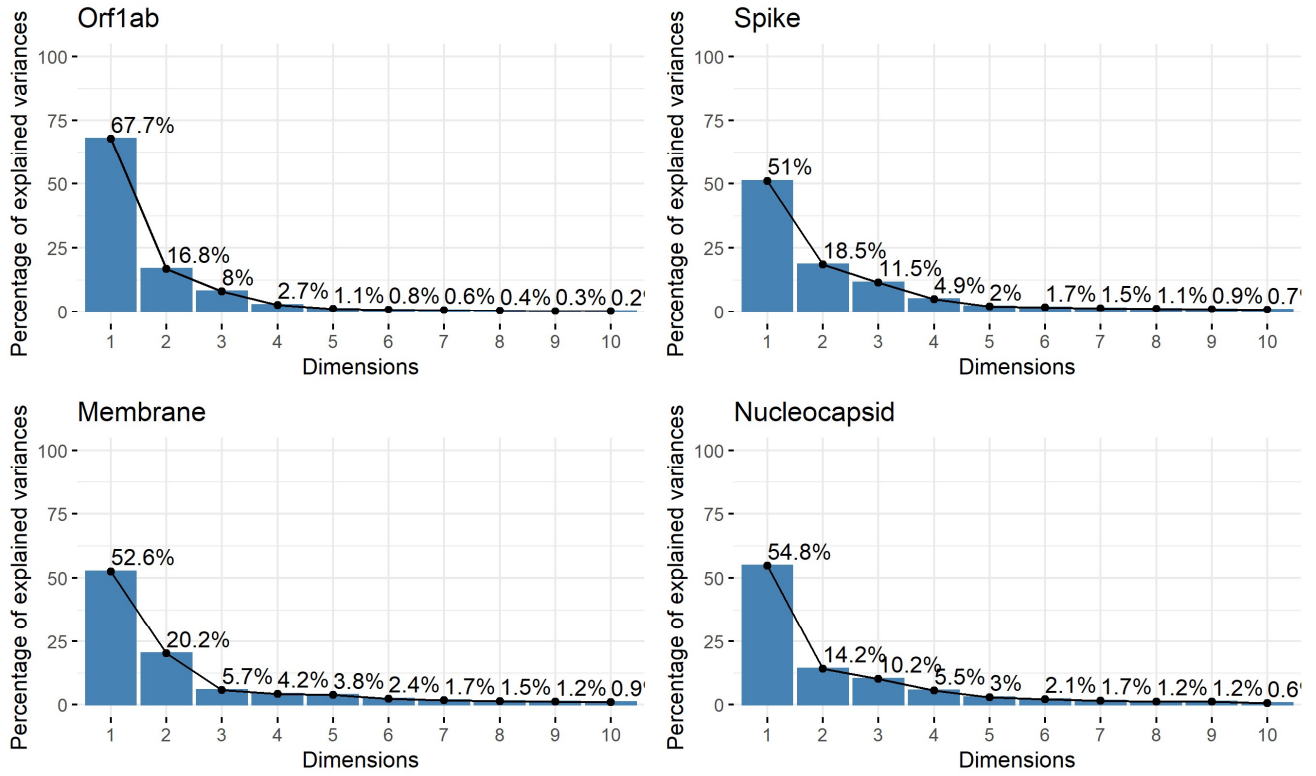
34 **Figure S1. Count of different virus species in the database.**



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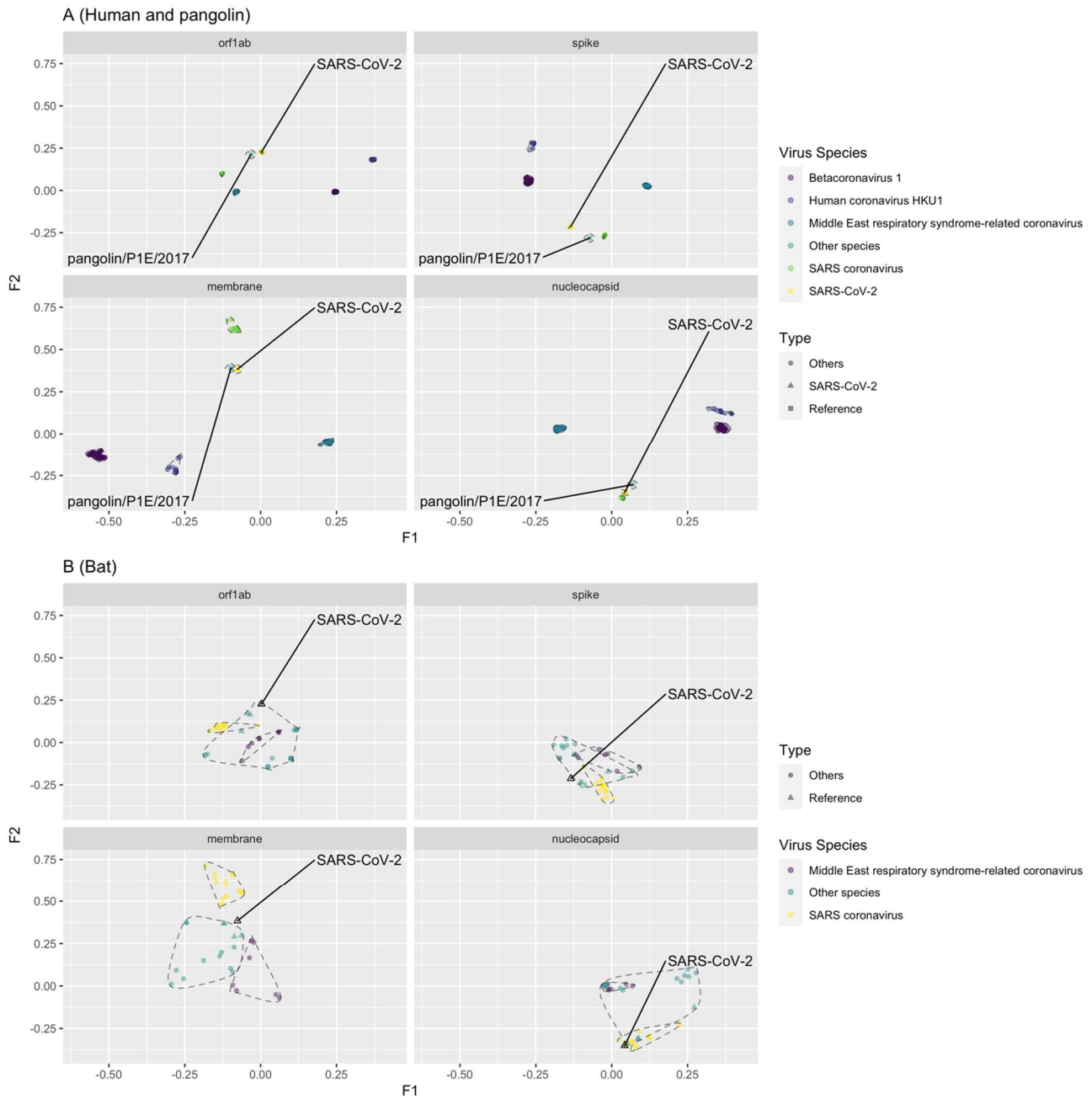
37 Figure S2. Global correspondence analysis scree plot by different genes.



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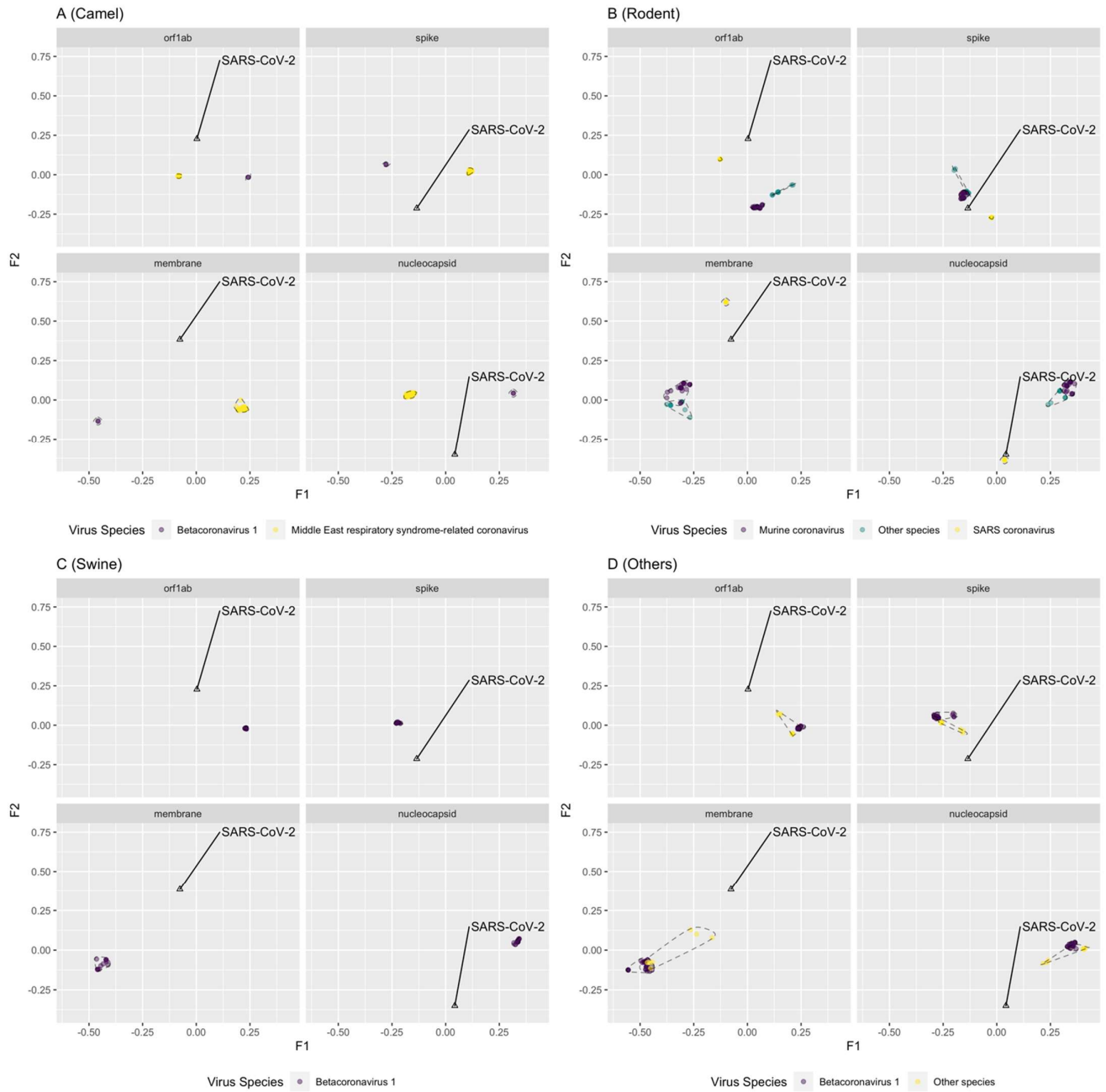
40 Figure S3. Factorial map of the first and second factors for global CA by different genes, coloured by different  
41 viral species, separated by (A) human and pangolin host and (B) bat host. The data from the same virus specie  
42 were grouped by dashed circles.



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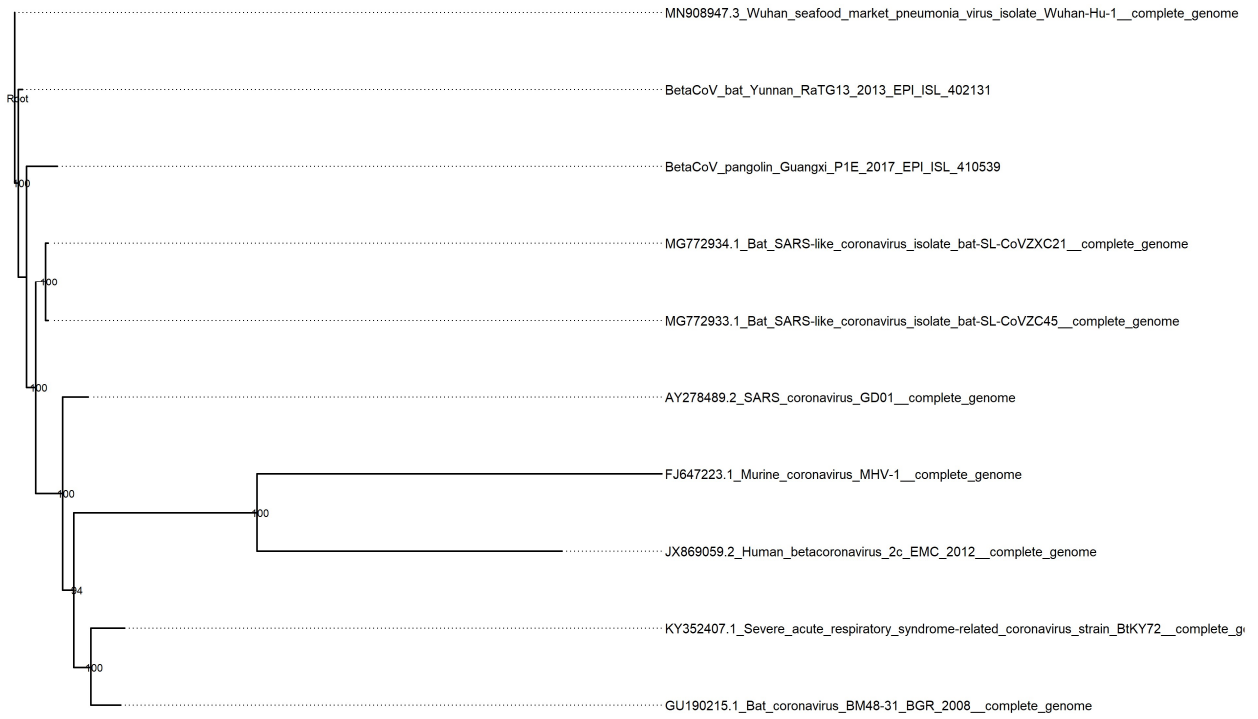
45 Figure S4. Factorial map of the first and second factors for global CA by different genes, coloured by different  
 46 virus species, separated by hosts of (A) camel, (B) rodent, (C) swine and (D) others.



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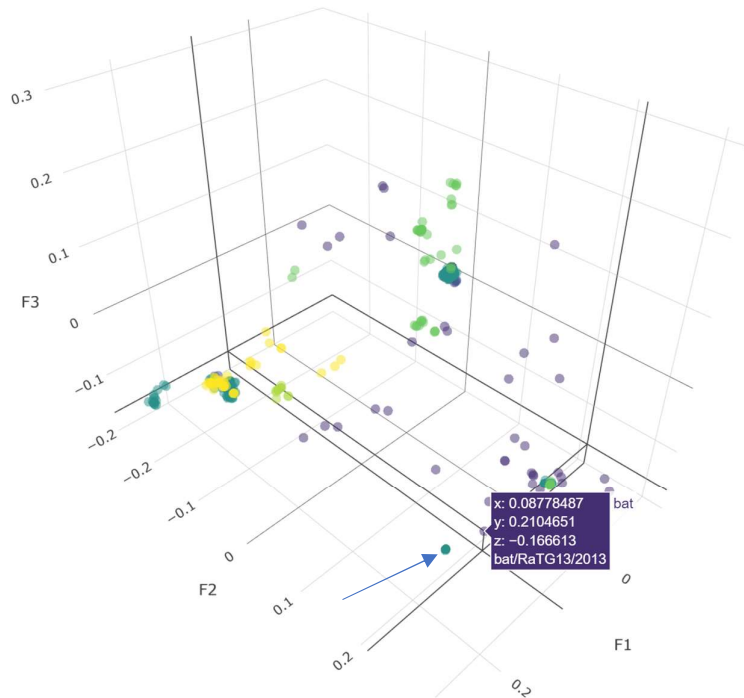
49 Figure S5. Phylogenetic tree of SARS-CoV-2 and related strains. The tree was built by IQ-TREE<sup>2</sup>, with Best-  
50 fit model: GTR+F+R3 chosen according to AIC. The alignment was performed by MAFFT<sup>3</sup>.



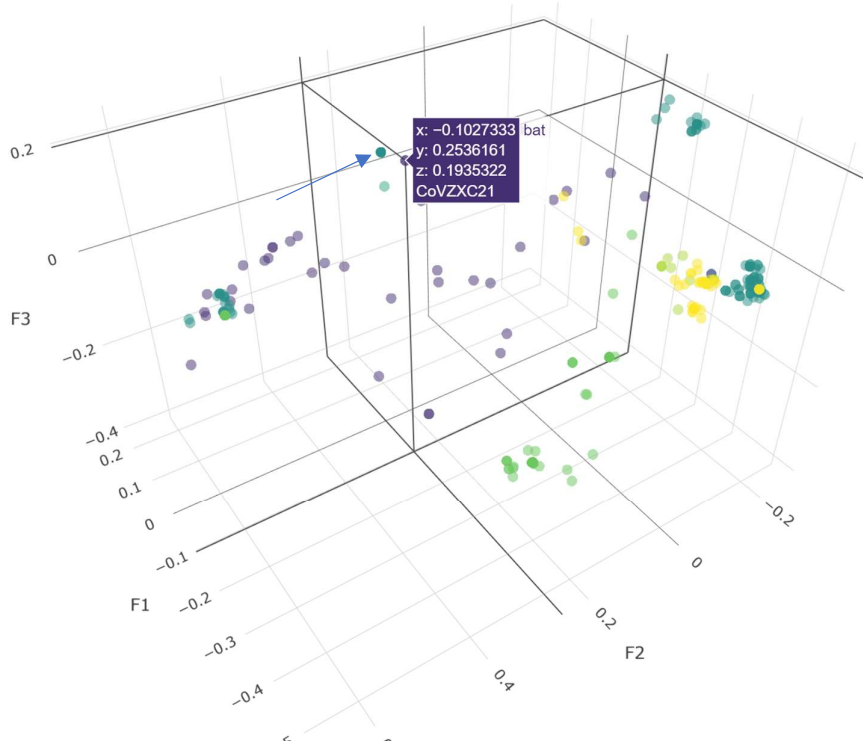
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- 53 Figure S6. Factorial map of the first, second and third factors for WCA analyses. (The data points of SARS-  
54 CoV-2 were pointed by blue arrows)
- 55 A. spike gene (interactive online version available at [https://koohoko.github.io/CoV\\_codon\\_usage/plot\\_wca\\_spike.html](https://koohoko.github.io/CoV_codon_usage/plot_wca_spike.html))

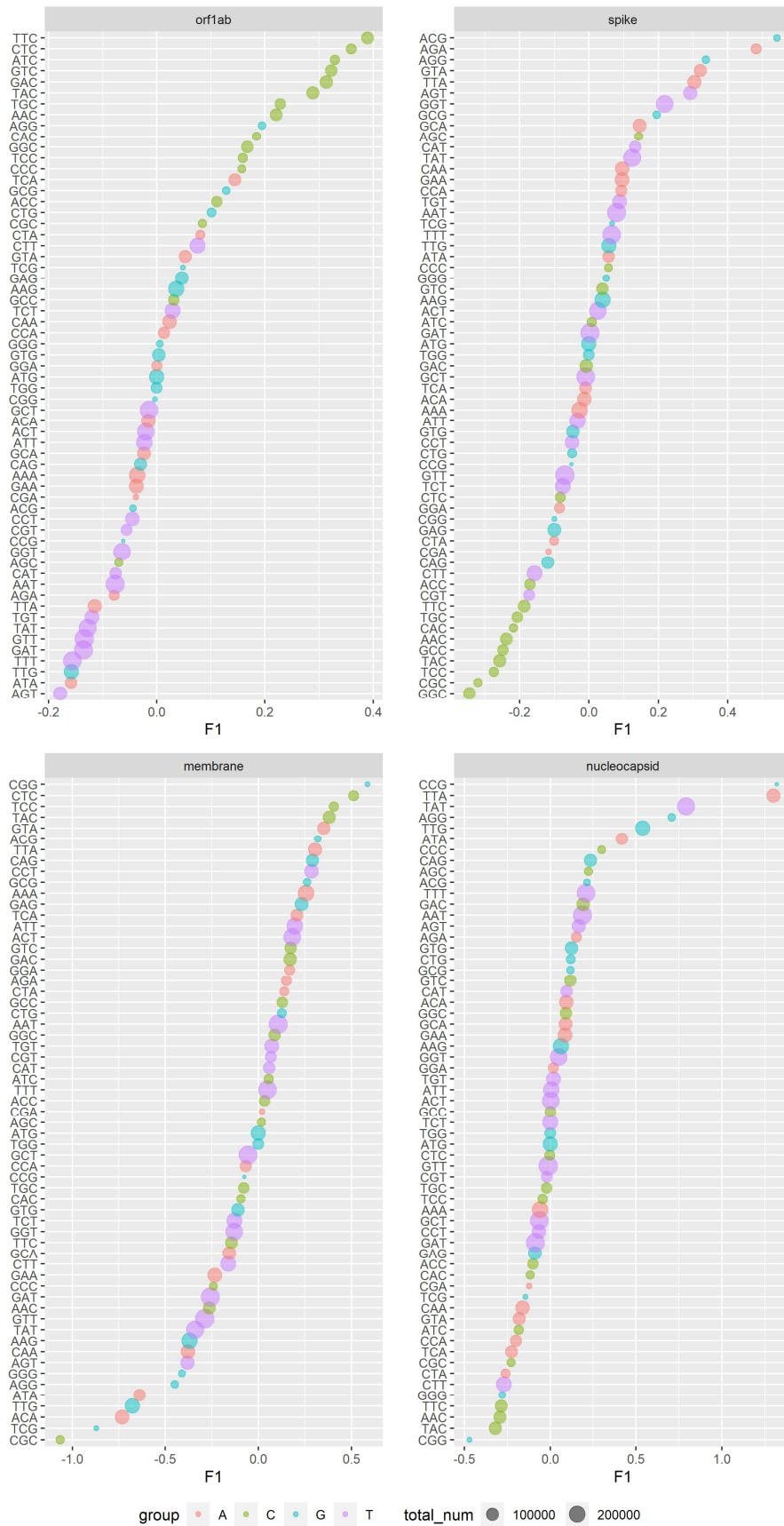


- 56
- 57 B. membrane gene (interactive online version available at [https://koohoko.github.io/CoV\\_codon\\_usage/plot\\_wca\\_membrane.html](https://koohoko.github.io/CoV_codon_usage/plot_wca_membrane.html))





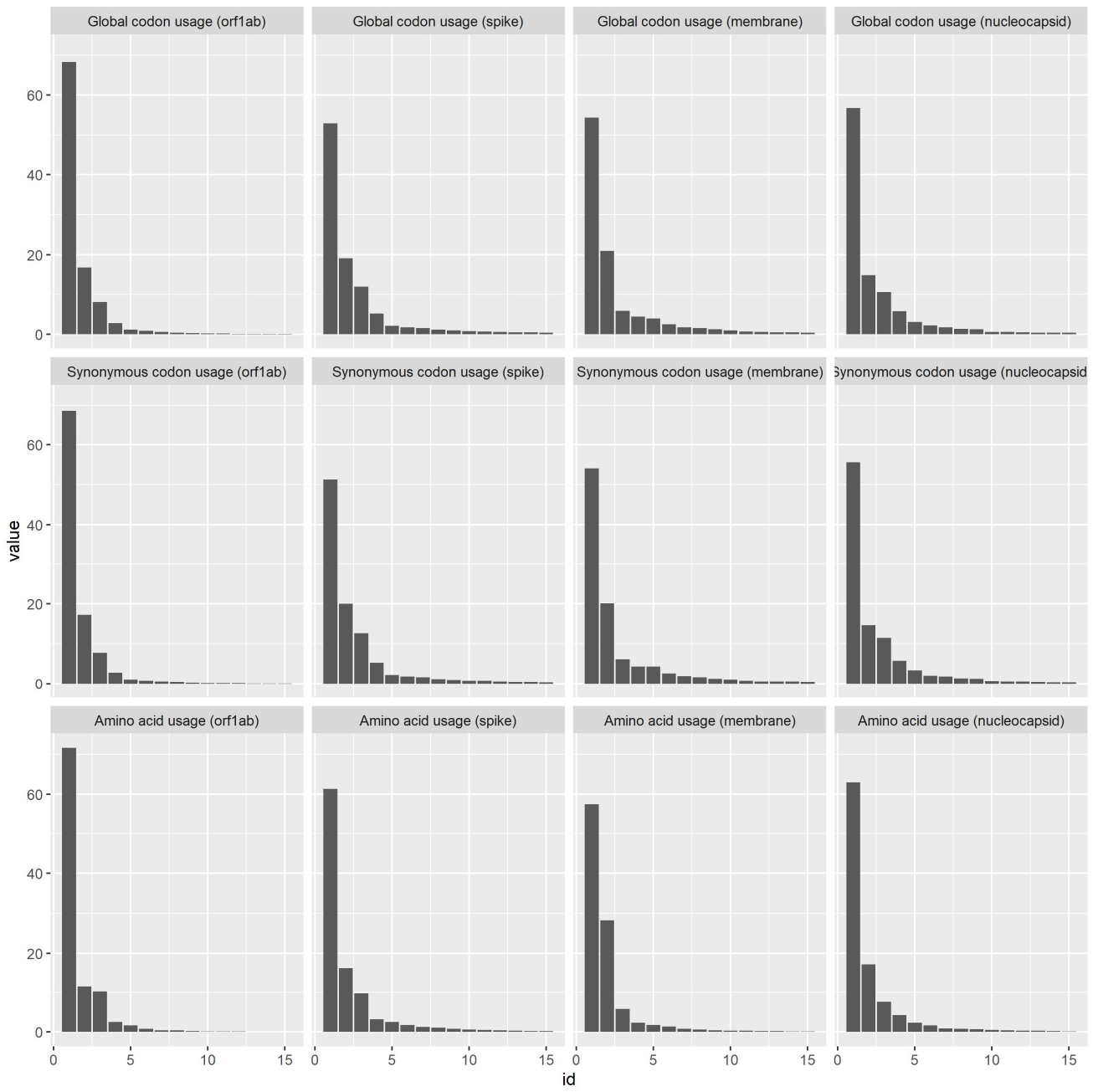
59 Figure S7. Distribution of codons on the first factors of WCA. Different color indicated different nucleotide  
 60 on the third base of the codons.



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63 Figure S8. Scree plot of eigen values of all correspondence analyses in this study.



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66 **References**

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- 68 1. Lobry, J. R. *Multivariate Analyses of Codon Usage Biases. Multivariate Analyses of Codon Usage*  
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71 phylogenetic tool for maximum likelihood analysis. *Nucleic Acids Res.* (2016).  
72 doi:10.1093/nar/gkw256
- 73 3. Katoh, K. & Standley, D. M. MAFFT multiple sequence alignment software version 7: improvements  
74 in performance and usability. *Mol. Biol. Evol.* **30**, 772–80 (2013).

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Table S1. Accession ID for the sequences including in this study

id	range	organism	strain_name	Gene		
MH687968	NA	Betacoronavirus sp.	VZ_BetaCoV_16715_52	membrane		
MH687968	NA	Betacoronavirus sp.	VZ_BetaCoV_16715_52	nucleocapsid		
MH687968	NA	Betacoronavirus sp.	VZ_BetaCoV_16715_52	orf1ab		
MH687968	NA	Betacoronavirus sp.	VZ_BetaCoV_16715_52	spike		
MH687969	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_33	membrane		
MH687969	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_33	nucleocapsid		
MH687969	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_33	orf1ab		
MH687969	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_33	spike		
MH687970	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_34_c12	membrane		
MH687970	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_34_c12	nucleocapsid		
MH687970	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_34_c12	orf1ab		
MH687970	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_34_c12	spike		
MH687971	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_34_c13	membrane		
MH687971	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_34_c13	nucleocapsid		
MH687971	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_34_c13	orf1ab		
MH687971	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_34_c13	spike		
MH687972	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_38	membrane		
MH687972	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_38	nucleocapsid		
MH687972	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_38	orf1ab		
MH687972	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_38	spike		
MH687973	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_39	membrane		
MH687973	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_39	nucleocapsid		
MH687973	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_39	orf1ab		
MH687973	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_39	spike		
MH687974	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_43	membrane		
MH687974	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_43	nucleocapsid		
MH687974	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_43	orf1ab		
MH687974	NA	Betacoronavirus sp.	VZ_BetaCoV_20724_43	spike		
MH687976	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_1	membrane		
MH687976	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_1	nucleocapsid		
MH687976	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_1	orf1ab		
MH687976	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_1	spike		
MH687977	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_10	membrane		
MH687977	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_10	nucleocapsid		
MH687977	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_10	orf1ab		
MH687977	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_10	spike		
MH687978	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_6	membrane		
MH687978	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_6	nucleocapsid		
MH687978	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_6	orf1ab		
MH687978	NA	Betacoronavirus sp.	VZ_BetaCoV_22084_6	spike		
NC_039207	27842-28498	Betacoronavirus	Erinaceus/VMC/DEU/2012	ErinaceusCoV/2012-174/GER/2012	membrane	
NC_039207	28552-29826	Betacoronavirus	Erinaceus/VMC/DEU/2012	ErinaceusCoV/2012-174/GER/2012	nucleocapsid	
NC_039207	21610-25602	Betacoronavirus	Erinaceus/VMC/DEU/2012	ErinaceusCoV/2012-174/GER/2012	spike	
NC_039207	241-21692	Betacoronavirus	Erinaceus/VMC/DEU/2012	ErinaceusCoV/2012-174/GER/2012	orf1ab	
MK679660	27863-28519	Hedgehog coronavirus 1	UNKNOWN-MK679660	membrane		
MK679660	28573-29850	Hedgehog coronavirus 1	UNKNOWN-MK679660	nucleocapsid		
MK679660	21628-25614	Hedgehog coronavirus 1	UNKNOWN-MK679660	spike		
MK679660	241-21710	Hedgehog coronavirus 1	UNKNOWN-MK679660	orf1ab		
NC_038294	27852-28511	Betacoronavirus	England 1	England 1	membrane	
NC_038294	28565-29800	Betacoronavirus	England 1	England 1	nucleocapsid	
NC_038294	278-21513	Betacoronavirus	England 1	England 1	orf1ab	
NC_038294	21455-25516	Betacoronavirus	England 1	England 1	spike	
KJ473821	NA	BtVs-BetaCoV/SC2013	UNKNOWN-KJ473821	orf1ab		
KJ473821	NA	BtVs-BetaCoV/SC2013	UNKNOWN-KJ473821	membrane		
KJ473821	NA	BtVs-BetaCoV/SC2013	UNKNOWN-KJ473821	nucleocapsid		
KJ473821	NA	BtVs-BetaCoV/SC2013	UNKNOWN-KJ473821	spike		
MK357908	NA	Middle East respiratory syndrome-related coronavirus		011/DAB/C8/F<1	membrane	
MK357908	NA	Middle East respiratory syndrome-related coronavirus		011/DAB/C8/F<1	nucleocapsid	
MK357908	NA	Middle East respiratory syndrome-related coronavirus		011/DAB/C8/F<1	orf1ab	
MK357908	NA	Middle East respiratory syndrome-related coronavirus		011/DAB/C8/F<1	spike	
MK357909	NA	Middle East respiratory syndrome-related coronavirus		011/LOM/C20/F<1	membrane	
MK357909	NA	Middle East respiratory syndrome-related coronavirus		011/LOM/C20/F<1	nucleocapsid	
MK357909	NA	Middle East respiratory syndrome-related coronavirus		011/LOM/C20/F<1	orf1ab	
MK357909	NA	Middle East respiratory syndrome-related coronavirus		011/LOM/C20/F<1	spike	
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MH371127	27853-28512	Middle East respiratory syndrome-related coronavirus		2362	membrane	
MH371127	28566-29807	Middle East respiratory syndrome-related coronavirus		2362	nucleocapsid	
MH371127	21456-25517	Middle East respiratory syndrome-related coronavirus		2362	spike	
MH395139	279-21514	Middle East respiratory syndrome-related coronavirus		2363	orf1ab	
MH395139	27853-28512	Middle East respiratory syndrome-related coronavirus		2363	membrane	
MH395139	28566-29807	Middle East respiratory syndrome-related coronavirus		2363	nucleocapsid	
MH395139	21456-25517	Middle East respiratory syndrome-related coronavirus		2363	spike	
MH432120	279-21514	Middle East respiratory syndrome-related coronavirus		2366	orf1ab	
MH432120	27853-28512	Middle East respiratory syndrome-related coronavirus		2366	membrane	
MH432120	28566-29807	Middle East respiratory syndrome-related coronavirus		2366	nucleocapsid	
MH432120	21456-25517	Middle East respiratory syndrome-related coronavirus		2366	spike	
MG596802	217-21446	Middle East respiratory syndrome-related coronavirus		Bat-CoV/H.savii/Italy/206645-40/2011	orf1ab	
MG596802	27756-28412	Middle East respiratory syndrome-related coronavirus		Bat-CoV/H.savii/Italy/206645-40/2011	membrane	
MG596802	28460-29749	Middle East respiratory syndrome-related coronavirus		Bat-CoV/H.savii/Italy/206645-40/2011	nucleocapsid	
MG596802	21388-25425	Middle East respiratory syndrome-related coronavirus		Bat-CoV/H.savii/Italy/206645-40/2011	spike	
MG596803	208-21437	Middle East respiratory syndrome-related coronavirus		Bat-CoV/P.khulii/Italy/206645-63/2011	orf1ab	
MG596803	27747-28403	Middle East respiratory syndrome-related coronavirus		Bat-CoV/P.khulii/Italy/206645-63/2011	membrane	
MG596803	28451-29740	Middle East respiratory syndrome-related coronavirus		Bat-CoV/P.khulii/Italy/206645-63/2011	nucleocapsid	
MG596803	21379-25416	Middle East respiratory syndrome-related coronavirus		Bat-CoV/P.khulii/Italy/206645-63/2011	spike	
MK564474	NA	Middle East respiratory syndrome-related coronavirus		camel/MERS/Amibara/118/2017	orf1ab	
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MK564475	NA	Middle East respiratory syndrome-related coronavirus		camel/MERS/Amibara/126/2017	orf1ab	
MK564475	NA	Middle East respiratory syndrome-related coronavirus		camel/MERS/Amibara/126/2017	membrane	
MK564475	NA	Middle East respiratory syndrome-related coronavirus		camel/MERS/Amibara/126/2017	nucleocapsid	
MK564475	NA	Middle East respiratory syndrome-related coronavirus		camel/MERS/Amibara/126/2017	spike	
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KY581695	21456-25517	Middle East respiratory syndrome-related coronavirus		Camel/UAE_1B-A_2014	spike	
KY581696	279-21514	Middle East respiratory syndrome-related coronavirus		Camel/UAE_1H-B_2014	orf1ab	
KY581696	27853-28512	Middle East respiratory syndrome-related coronavirus		Camel/UAE_1H-B_2014	membrane	
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KY581696	21456-25517	Middle East respiratory syndrome-related coronavirus		Camel/UAE_1H-B_2014	spike	
KY581697	279-21514	Middle East respiratory syndrome-related coronavirus		Camel/UAE_1H-D_2014	orf1ab	
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MF598702	279-21514	Middle East respiratory syndrome-related coronavirus		camel/UAE_414377_W3_2015	orf1ab	











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88	MH013216	28566-29807	Middle East respiratory syndrome-related coronavirus	HCoV-EMC	nucleocapsid
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90	MH306207	279-21514	Middle East respiratory syndrome-related coronavirus	HCoV-EMC	orf1ab
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105	MK483839	21456-25517	Middle East respiratory syndrome-related coronavirus	Hu/Albaha-KSA-0800H/2018	spike
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111	MF000460	27775-28434	Middle East respiratory syndrome-related coronavirus	Hu/Amman-Jordan-12716/2015	membrane
112	MF000460	28488-29729	Middle East respiratory syndrome-related coronavirus	Hu/Amman-Jordan-12716/2015	nucleocapsid
113	MF000460	21435-25496	Middle East respiratory syndrome-related coronavirus	Hu/Amman-Jordan-12716/2015	spike
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117	MF000459	21408-25469	Middle East respiratory syndrome-related coronavirus	Hu/Amman-Jordan-12918/2015	spike
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123	KX154694	28544-29785	Middle East respiratory syndrome-related coronavirus	Hu/Artawiyah-KSA-13328/2016	nucleocapsid
124	KX154694	257-21492	Middle East respiratory syndrome-related coronavirus	Hu/Artawiyah-KSA-13328/2016	orf1ab
125	KX154694	21434-25495	Middle East respiratory syndrome-related coronavirus	Hu/Artawiyah-KSA-13328/2016	spike
126	MK462244	27853-28512	Middle East respiratory syndrome-related coronavirus	Hu/Aseer-KSA-173RS1288/2017	membrane
127	MK462244	28566-29807	Middle East respiratory syndrome-related coronavirus	Hu/Aseer-KSA-173RS1288/2017	nucleocapsid
128	MK462244	279-21514	Middle East respiratory syndrome-related coronavirus	Hu/Aseer-KSA-173RS1288/2017	orf1ab
129	MK462244	21456-25517	Middle East respiratory syndrome-related coronavirus	Hu/Aseer-KSA-173RS1288/2017	spike
130	KY688119	258-21493	Middle East respiratory syndrome-related coronavirus	Hu/Aseer-KSA-Rs924/2015	orf1ab
131	KY688119	27791-28450	Middle East respiratory syndrome-related coronavirus	Hu/Aseer-KSA-Rs924/2015	membrane
132	KY688119	28504-29745	Middle East respiratory syndrome-related coronavirus	Hu/Aseer-KSA-Rs924/2015	nucleocapsid
133	KY688119	21435-25496	Middle East respiratory syndrome-related coronavirus	Hu/Aseer-KSA-Rs924/2015	spike
134	KY688120	258-21493	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11002/2015	orf1ab
135	KY688120	27832-28491	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11002/2015	membrane
136	KY688120	28545-29786	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11002/2015	nucleocapsid
137	KY688120	21435-25496	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11002/2015	spike
138	KY688123	258-21493	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11150/2015	orf1ab
139	KY688123	27832-28491	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11150/2015	membrane
140	KY688123	28545-29786	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11150/2015	nucleocapsid
141	KY688123	21435-25496	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11150/2015	spike
142	KY688121	258-21493	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11442/2015	orf1ab
143	KY688121	27832-28491	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11442/2015	membrane
144	KY688121	28545-29786	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11442/2015	nucleocapsid
145	KY688121	21435-25496	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11442/2015	spike
146	KY688122	258-21493	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11767/2015	orf1ab
147	KY688122	27832-28491	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11767/2015	membrane
148	KY688122	28545-29786	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11767/2015	nucleocapsid
149	KY688122	21435-25496	Middle East respiratory syndrome-related coronavirus	Hu/Hufuf-KSA-11767/2015	spike
150	KX154690	27831-28490	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-161RS1146/2016	membrane
151	KX154690	28544-29785	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-161RS1146/2016	nucleocapsid
152	KX154690	257-21492	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-161RS1146/2016	orf1ab
153	KX154690	21434-25495	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-161RS1146/2016	spike
154	MK462243	27850-28509	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1101/2017	membrane
155	MK462243	28563-29804	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1101/2017	nucleocapsid
156	MK462243	279-21514	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1101/2017	orf1ab
157	MK462243	21456-25517	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1101/2017	spike
158	MK462245	27850-28509	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1512/2017	membrane
159	MK462245	28563-29804	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1512/2017	nucleocapsid
160	MK462245	279-21514	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1512/2017	orf1ab
161	MK462245	21456-25517	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1512/2017	spike
162	MK462246	27850-28509	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1570/2017	membrane
163	MK462246	28563-29804	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1570/2017	nucleocapsid
164	MK462246	279-21514	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1570/2017	orf1ab
165	MK462246	21456-25517	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-173RS1570/2017	spike
166	MK462247	27853-28512	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-182RS2449/2018	membrane
167	MK462247	28566-29807	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-182RS2449/2018	nucleocapsid
168	MK462247	279-21514	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-182RS2449/2018	orf1ab
169	MK462247	21456-25517	Middle East respiratory syndrome-related coronavirus	Hu/Jeddah-KSA-182RS2449/2018	spike
170	MK039552	279-21514	Middle East respiratory syndrome-related coronavirus	Hu/Jordan-201440011123/2014	orf1ab
171	MK039552	27853-28512	Middle East respiratory syndrome-related coronavirus	Hu/Jordan-201440011123/2014	membrane
172	MK039552	28566-29807	Middle East respiratory syndrome-related coronavirus	Hu/Jordan-201440011123/2014	nucleocapsid
173	MK039552	21456-25517	Middle East respiratory syndrome-related coronavirus	Hu/Jordan-201440011123/2014	spike









MG923480	27421-28080	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV1787/2016	membrane
MG923480	28134-29375	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV1787/2016	nucleocapsid
MG923480	267-21499	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV1787/2016	orf1ab
MG923480	21441-25502	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV1787/2016	spike
MG923476	27421-28080	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV1989/2016	membrane
MG923476	28134-29375	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV1989/2016	nucleocapsid
MG923476	267-21499	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV1989/2016	orf1ab
MG923476	21441-25502	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV1989/2016	spike
MG923481	27421-28080	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV2020/2016	membrane
MG923481	28134-29375	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV2020/2016	nucleocapsid
MG923481	267-21499	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV2020/2016	orf1ab
MG923481	21441-25502	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV2020/2016	spike
MG923477	27417-28076	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV2040/2016	membrane
MG923477	28130-29371	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV2040/2016	nucleocapsid
MG923477	263-21495	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV2040/2016	orf1ab
MG923477	21437-25498	Middle East respiratory syndrome-related coronavirus	MERS-CoV camel/Nigeria/NV2040/2016	spike
MK129253	279-21514	Middle East respiratory syndrome-related coronavirus	MERS-CoV/KOR/KCDC/001_2018-TSVi	orf1ab
MK129253	27853-28512	Middle East respiratory syndrome-related coronavirus	MERS-CoV/KOR/KCDC/001_2018-TSVi	membrane
MK129253	28566-29807	Middle East respiratory syndrome-related coronavirus	MERS-CoV/KOR/KCDC/001_2018-TSVi	nucleocapsid
MK129253	21456-25517	Middle East respiratory syndrome-related coronavirus	MERS-CoV/KOR/KCDC/001_2018-TSVi	spike
KT326819	NA	Middle East respiratory syndrome-related coronavirus	MERS-CoV/KOR/KNH/001_05_2015	membrane
KT326819	NA	Middle East respiratory syndrome-related coronavirus	MERS-CoV/KOR/KNH/001_05_2015	nucleocapsid
KT326819	NA	Middle East respiratory syndrome-related coronavirus	MERS-CoV/KOR/KNH/001_05_2015	orf1ab
KT326819	NA	Middle East respiratory syndrome-related coronavirus	MERS-CoV/KOR/KNH/001_05_2015	spike
KT225476	NA	Middle East respiratory syndrome-related coronavirus	MERS-CoV/THA/CU/17_06_2015	membrane
KT225476	NA	Middle East respiratory syndrome-related coronavirus	MERS-CoV/THA/CU/17_06_2015	nucleocapsid
KT225476	NA	Middle East respiratory syndrome-related coronavirus	MERS-CoV/THA/CU/17_06_2015	orf1ab
KT225476	NA	Middle East respiratory syndrome-related coronavirus	MERS-CoV/THA/CU/17_06_2015	spike
MH822886	267-21502	Middle East respiratory syndrome-related coronavirus	MERS-CoV_England-KSA/1/2018	orf1ab
MH822886	27841-28500	Middle East respiratory syndrome-related coronavirus	MERS-CoV_England-KSA/1/2018	membrane
MH822886	28554-29795	Middle East respiratory syndrome-related coronavirus	MERS-CoV_England-KSA/1/2018	nucleocapsid
MH822886	21444-25505	Middle East respiratory syndrome-related coronavirus	MERS-CoV_England-KSA/1/2018	spike
MF593268	NA	Middle East respiratory syndrome-related coronavirus	Neoromicia/5038orf1ab	
MF593268	NA	Middle East respiratory syndrome-related coronavirus	Neoromicia/5038membrane	
MF593268	NA	Middle East respiratory syndrome-related coronavirus	Neoromicia/5038nucleocapsid	
MF593268	NA	Middle East respiratory syndrome-related coronavirus	Neoromicia/5038spike	
MG021451	27814-28470	Middle East respiratory syndrome-related coronavirus	NL13845	membrane
MG021451	28526-29824	Middle East respiratory syndrome-related coronavirus	NL13845	nucleocapsid
MG021451	237-21517	Middle East respiratory syndrome-related coronavirus	NL13845	orf1ab
MG021451	21459-25529	Middle East respiratory syndrome-related coronavirus	NL13845	spike
MG021452	27810-28466	Middle East respiratory syndrome-related coronavirus	NL140422	membrane
MG021452	28521-29822	Middle East respiratory syndrome-related coronavirus	NL140422	nucleocapsid
MG021452	238-21560	Middle East respiratory syndrome-related coronavirus	NL140422	orf1ab
MG021452	21502-25551	Middle East respiratory syndrome-related coronavirus	NL140422	spike
MK280984	27826-28485	Middle East respiratory syndrome-related coronavirus	Qatar15	membrane
MK280984	28539-29780	Middle East respiratory syndrome-related coronavirus	Qatar15	nucleocapsid
MK280984	252-21487	Middle East respiratory syndrome-related coronavirus	Qatar15	orf1ab
MK280984	21429-25490	Middle East respiratory syndrome-related coronavirus	Qatar15	spike
JX993988	NA	Bat coronavirus Cp/Yunnan2011	Cp/Yunnan2011	membrane
JX993988	NA	Bat coronavirus Cp/Yunnan2011	Cp/Yunnan2011	nucleocapsid
JX993988	NA	Bat coronavirus Cp/Yunnan2011	Cp/Yunnan2011	spike
JX993987	NA	Bat coronavirus Rp/Shaanxi2011	Rp/Shaanxi2011	membrane
JX993987	NA	Bat coronavirus Rp/Shaanxi2011	Rp/Shaanxi2011	nucleocapsid
JX993987	NA	Bat coronavirus Rp/Shaanxi2011	Rp/Shaanxi2011	spike
KJ473812	NA	BtRF-BetaCoV/HeB2013	BtRF-HeB2013	orf1ab
KJ473812	NA	BtRF-BetaCoV/HeB2013	BtRF-HeB2013	membrane
KJ473812	NA	BtRF-BetaCoV/HeB2013	BtRF-HeB2013	nucleocapsid
KJ473812	NA	BtRF-BetaCoV/HeB2013	BtRF-HeB2013	spike
KJ473811	NA	BtRF-BetaCoV/JL2012	BtRF-JL2012	orf1ab
KJ473811	NA	BtRF-BetaCoV/JL2012	BtRF-JL2012	membrane
KJ473811	NA	BtRF-BetaCoV/JL2012	BtRF-JL2012	nucleocapsid
KJ473811	NA	BtRF-BetaCoV/JL2012	BtRF-JL2012	spike
KJ473813	NA	BtRF-BetaCoV/SX2013	BtRF-SX2013	orf1ab
KJ473813	NA	BtRF-BetaCoV/SX2013	BtRF-SX2013	membrane
KJ473813	NA	BtRF-BetaCoV/SX2013	BtRF-SX2013	nucleocapsid
KJ473813	NA	BtRF-BetaCoV/SX2013	BtRF-SX2013	spike
KJ473815	NA	BtRs-BetaCoV/GX2013	BtRs-GX2013	orf1ab
KJ473815	NA	BtRs-BetaCoV/GX2013	BtRs-GX2013	membrane
KJ473815	NA	BtRs-BetaCoV/GX2013	BtRs-GX2013	nucleocapsid
KJ473815	NA	BtRs-BetaCoV/GX2013	BtRs-GX2013	spike
KJ473814	NA	BtRs-BetaCoV/HuB2013	BtRs-HuB2013	orf1ab
KJ473814	NA	BtRs-BetaCoV/HuB2013	BtRs-HuB2013	membrane
KJ473814	NA	BtRs-BetaCoV/HuB2013	BtRs-HuB2013	nucleocapsid
KJ473814	NA	BtRs-BetaCoV/HuB2013	BtRs-HuB2013	spike
KJ473816	NA	BtRs-BetaCoV/YN2013	BtRs-YN2013	orf1ab
KJ473816	NA	BtRs-BetaCoV/YN2013	BtRs-YN2013	membrane
KJ473816	NA	BtRs-BetaCoV/YN2013	BtRs-YN2013	nucleocapsid
KJ473816	NA	BtRs-BetaCoV/YN2013	BtRs-YN2013	spike
DQ648794	NA	Bat coronavirus (BtCoV/133/2005)	BtCoV/133/2005	orf1ab
DQ648794	NA	Bat coronavirus (BtCoV/133/2005)	BtCoV/133/2005	membrane
DQ648794	NA	Bat coronavirus (BtCoV/133/2005)	BtCoV/133/2005	nucleocapsid
DQ648794	NA	Bat coronavirus (BtCoV/133/2005)	BtCoV/133/2005	spike
KU558922	28684-29376	Betacoronavirus 1	Buffalo coronavirus B1-24F	membrane
KU558922	29386-30732	Betacoronavirus 1	Buffalo coronavirus B1-24F	nucleocapsid
KU558922	211-21494	Betacoronavirus 1	Buffalo coronavirus B1-24F	orf1ab
KU558922	23641-27732	Betacoronavirus 1	Buffalo coronavirus B1-24F	spike
KU558923	28639-29331	Betacoronavirus 1	Buffalo coronavirus B1-28F	membrane
KU558923	29341-30687	Betacoronavirus 1	Buffalo coronavirus B1-28F	nucleocapsid
KU558923	165-21448	Betacoronavirus 1	Buffalo coronavirus B1-28F	orf1ab
KU558923	23595-27686	Betacoronavirus 1	Buffalo coronavirus B1-28F	spike
NC_003045	28691-29383	Bovine coronavirus	BCoV-ENT	membrane
NC_003045	29393-30739	Bovine coronavirus	BCoV-ENT	nucleocapsid
NC_003045	211-21494	Bovine coronavirus	BCoV-ENT	orf1ab
NC_003045	23641-27732	Bovine coronavirus	BCoV-ENT	spike
KU886219	NA	Bovine coronavirus	BCV-AKS-01	membrane
KU886219	NA	Bovine coronavirus	BCV-AKS-01	nucleocapsid
KU886219	NA	Bovine coronavirus	BCV-AKS-01	spike
DQ811784	NA	Bovine coronavirus DB2	DB2	membrane
DQ811784	NA	Bovine coronavirus DB2	DB2	nucleocapsid
DQ811784	NA	Bovine coronavirus DB2	DB2	orf1ab
DQ811784	NA	Bovine coronavirus DB2	DB2	spike
EF424619	28675-29367	Bovine coronavirus E-AH187	E-AH187	membrane
EF424619	29377-30723	Bovine coronavirus E-AH187	E-AH187	nucleocapsid
EF424619	23625-27716	Bovine coronavirus E-AH187	E-AH187	spike
EF424615	28691-29383	Bovine coronavirus E-AH65	E-AH65	membrane
EF424615	29393-30739	Bovine coronavirus E-AH65	E-AH65	nucleocapsid
EF424615	23641-27732	Bovine coronavirus E-AH65	E-AH65	spike
EF424616	28675-29367	Bovine coronavirus E-AH65-TC	E-AH65-TC	membrane
EF424616	29377-30723	Bovine coronavirus E-AH65-TC	E-AH65-TC	nucleocapsid
EF424616	23625-27716	Bovine coronavirus E-AH65-TC	E-AH65-TC	spike
EF424620	28675-29367	Bovine coronavirus R-AH187	R-AH187	membrane

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EF424620	29377-30723	Bovine coronavirus R-AH187	R-AH187	nucleocapsid	
EF424620	23625-27716	Bovine coronavirus R-AH187	R-AH187	spike	
EF424617	28675-29367	Bovine coronavirus R-AH65	R-AH65	membrane	
EF424617	29377-30723	Bovine coronavirus R-AH65	R-AH65	nucleocapsid	
EF424617	23625-27716	Bovine coronavirus R-AH65	R-AH65	spike	
EF424618	28675-29367	Bovine coronavirus R-AH65-TC	R-AH65-TC	membrane	
EF424618	29377-30723	Bovine coronavirus R-AH65-TC	R-AH65-TC	nucleocapsid	
EF424618	23625-27716	Bovine coronavirus R-AH65-TC	R-AH65-TC	spike	
EF424624	28659-29351	Calif-giraffe coronavirus US/OH3/2006	US/OH3/2006	membrane	
EF424624	29361-30707	Calif-giraffe coronavirus US/OH3/2006	US/OH3/2006	nucleocapsid	
EF424624	23625-27701	Calif-giraffe coronavirus US/OH3/2006	US/OH3/2006	spike	
KX432213	28624-29316	Canine respiratory coronavirus	BJ232	membrane	
KX432213	29326-30672	Canine respiratory coronavirus	BJ232	nucleocapsid	
KX432213	144-21427	Canine respiratory coronavirus	BJ232	orflab	
KX432213	23574-27665	Canine respiratory coronavirus	BJ232	spike	
KF906249	28699-29391	Dromedary camel coronavirus HKU23	HKU23-265F	membrane	
KF906249	29401-30747	Dromedary camel coronavirus HKU23	HKU23-265F	nucleocapsid	
KF906249	215-21498	Dromedary camel coronavirus HKU23	HKU23-265F	orflab	
KF906249	23645-27745	Dromedary camel coronavirus HKU23	HKU23-265F	spike	
KF906250	28699-29391	Dromedary camel coronavirus HKU23	HKU23-362F	membrane	
KF906250	29401-30747	Dromedary camel coronavirus HKU23	HKU23-362F	nucleocapsid	
KF906250	215-21498	Dromedary camel coronavirus HKU23	HKU23-362F	orflab	
KF906250	23645-27745	Dromedary camel coronavirus HKU23	HKU23-362F	spike	
LC061273	209-21561	Equine coronavirus	Obihiro12-1	orflab	
LC061273	28585-29277	Equine coronavirus	Obihiro12-1	membrane	
LC061273	29287-30627	Equine coronavirus	Obihiro12-1	nucleocapsid	
LC061273	23708-27799	Equine coronavirus	Obihiro12-1	spike	
LC061274	209-21561	Equine coronavirus	Obihiro12-2	orflab	
LC061274	28585-29277	Equine coronavirus	Obihiro12-2	membrane	
LC061274	29287-30627	Equine coronavirus	Obihiro12-2	nucleocapsid	
LC061274	23708-27799	Equine coronavirus	Obihiro12-2	spike	
LC061272	209-21570	Equine coronavirus	Tokachi09	orflab	
LC061272	28451-29143	Equine coronavirus	Tokachi09	membrane	
LC061272	29153-30493	Equine coronavirus	Tokachi09	nucleocapsid	
LC061272	23719-27810	Equine coronavirus	Tokachi09	spike	
EF424622	28659-29351	Giraffe coronavirus US/OH3-TC/2006	US/OH3-TC/2006	membrane	
EF424622	29361-30707	Giraffe coronavirus US/OH3-TC/2006	US/OH3-TC/2006	nucleocapsid	
EF424622	23625-27701	Giraffe coronavirus US/OH3-TC/2006	US/OH3-TC/2006	spike	
EF424623	28659-29351	Giraffe coronavirus US/OH3/2003 US/OH3/2003	US/OH3/2003	membrane	
EF424623	29361-30707	Giraffe coronavirus US/OH3/2003 US/OH3/2003	US/OH3/2003	nucleocapsid	
EF424623	23625-27701	Giraffe coronavirus US/OH3/2003 US/OH3/2003	US/OH3/2003	spike	
KP198611	28400-29092	Human coronavirus OC43	1783A/10	membrane	
KP198611	29102-30448	Human coronavirus OC43	1783A/10	nucleocapsid	
KP198611	NA	Human coronavirus OC43	1783A/10	orflab	
KP198611	23640-27728	Human coronavirus OC43	1783A/10	spike	
KY014281	125-21411	Human coronavirus OC43	2002-04	orflab	
KY014281	28300-28992	Human coronavirus OC43	2002-04	membrane	
KY014281	29002-30348	Human coronavirus OC43	2002-04	nucleocapsid	
KY014281	23558-27628	Human coronavirus OC43	2002-04	spike	
KY014282	181-21467	Human coronavirus OC43	2007-09	orflab	
KY014282	28371-29063	Human coronavirus OC43	2007-09	membrane	
KY014282	29073-30419	Human coronavirus OC43	2007-09	nucleocapsid	
KY014282	23611-27699	Human coronavirus OC43	2007-09	spike	
KP198610	28400-29092	Human coronavirus OC43	2058A/10	membrane	
KP198610	29102-30448	Human coronavirus OC43	2058A/10	nucleocapsid	
KP198610	NA	Human coronavirus OC43	2058A/10	orflab	
KP198610	23640-27728	Human coronavirus OC43	2058A/10	spike	
KU131570	28393-29085	Human coronavirus OC43	HCoV-OC43/UK/London/2011	membrane	
KU131570	29095-30441	Human coronavirus OC43	HCoV-OC43/UK/London/2011	nucleocapsid	
KU131570	23642-27721	Human coronavirus OC43	HCoV-OC43/UK/London/2011	spike	
KU131570	212-21948	Human coronavirus OC43	HCoV-OC43/UK/London/2011	orflab	
MF314143	28401-29093	Human coronavirus OC43	HCoV-OC43/USA/ACRI_0052/2016	membrane	
MF314143	29103-30449	Human coronavirus OC43	HCoV-OC43/USA/ACRI_0052/2016	nucleocapsid	
MF314143	211-21497	Human coronavirus OC43	HCoV-OC43/USA/ACRI_0052/2016	orflab	
MF314143	23641-27729	Human coronavirus OC43	HCoV-OC43/USA/ACRI_0052/2016	spike	
MH121121	28386-29078	Human coronavirus OC43	HCoV-OC43/USA/ACRI_0213/2016	membrane	
MH121121	29088-30434	Human coronavirus OC43	HCoV-OC43/USA/ACRI_0213/2016	nucleocapsid	
MH121121	207-21493	Human coronavirus OC43	HCoV-OC43/USA/ACRI_0213/2016	orflab	
MH121121	23649-27725	Human coronavirus OC43	HCoV-OC43/USA/ACRI_0213/2016	spike	
MF374984	28393-29085	Human coronavirus OC43	HCoV-OC43/USA/TCNP_00204/2017	membrane	
MF374984	29095-30441	Human coronavirus OC43	HCoV-OC43/USA/TCNP_00204/2017	nucleocapsid	
MF374984	202-21497	Human coronavirus OC43	HCoV-OC43/USA/TCNP_00204/2017	orflab	
MF374984	23632-27720	Human coronavirus OC43	HCoV-OC43/USA/TCNP_00204/2017	spike	
MF374985	28385-29077	Human coronavirus OC43	HCoV-OC43/USA/TCNP_00212/2017	membrane	
MF374985	29087-30433	Human coronavirus OC43	HCoV-OC43/USA/TCNP_00212/2017	nucleocapsid	
MF374985	200-21486	Human coronavirus OC43	HCoV-OC43/USA/TCNP_00212/2017	orflab	
MF374985	23642-27724	Human coronavirus OC43	HCoV-OC43/USA/TCNP_00212/2017	spike	
MF374983	28384-29076	Human coronavirus OC43	HCoV-OC43/USA/TCNP_0070/2016	membrane	
MF374983	29086-30432	Human coronavirus OC43	HCoV-OC43/USA/TCNP_0070/2016	nucleocapsid	
MF374983	205-21491	Human coronavirus OC43	HCoV-OC43/USA/TCNP_0070/2016	orflab	
MF374983	23647-27723	Human coronavirus OC43	HCoV-OC43/USA/TCNP_0070/2016	spike	
JN129835	28386-29078	Human coronavirus OC43	HK04-02	membrane	
JN129835	29088-30434	Human coronavirus OC43	HK04-02	nucleocapsid	
JN129835	NA	Human coronavirus OC43	HK04-02	orflab	
JN129835	23640-27725	Human coronavirus OC43	HK04-02	spike	
KJ958218	28378-29070	Human coronavirus OC43	LY341	membrane	
KJ958218	29080-30426	Human coronavirus OC43	LY341	nucleocapsid	
KJ958218	211-21497	Human coronavirus OC43	LY341	orflab	
KJ958218	23641-27717	Human coronavirus OC43	LY341	spike	
KJ958219	28378-29070	Human coronavirus OC43	LY342	membrane	
KJ958219	29080-30426	Human coronavirus OC43	LY342	nucleocapsid	
KJ958219	211-21497	Human coronavirus OC43	LY342	orflab	
KJ958219	23641-27717	Human coronavirus OC43	LY342	spike	
KX538964	28377-29069	Human coronavirus OC43	MY-U002/12	membrane	
KX538964	29079-30425	Human coronavirus OC43	MY-U002/12	nucleocapsid	
KX538964	210-21496	Human coronavirus OC43	MY-U002/12	orflab	
KX538964	23640-27716	Human coronavirus OC43	MY-U002/12	spike	
KX538975	28380-29072	Human coronavirus OC43	MY-U1024/12	membrane	
KX538975	29082-30428	Human coronavirus OC43	MY-U1024/12	nucleocapsid	
KX538975	210-21496	Human coronavirus OC43	MY-U1024/12	orflab	
KX538975	23640-27719	Human coronavirus OC43	MY-U1024/12	spike	
KX538976	28377-29069	Human coronavirus OC43	MY-U1057/12	membrane	
KX538976	29079-30425	Human coronavirus OC43	MY-U1057/12	nucleocapsid	
KX538976	210-21496	Human coronavirus OC43	MY-U1057/12	orflab	
KX538976	23640-27716	Human coronavirus OC43	MY-U1057/12	spike	
KX538977	28380-29072	Human coronavirus OC43	MY-U1140/12	membrane	
KX538977	29082-30428	Human coronavirus OC43	MY-U1140/12	nucleocapsid	
KX538977	210-21496	Human coronavirus OC43	MY-U1140/12	orflab	
KX538977	23640-27719	Human coronavirus OC43	MY-U1140/12	spike	
KX538978	28377-29069	Human coronavirus OC43	MY-U1758/13	membrane	
KX538978	29079-30425	Human coronavirus OC43	MY-U1758/13	nucleocapsid	

41	KX538978	210-21496	Human coronavirus OC43	MY-U1758/13	orf1ab
42	KX538978	23640-27716	Human coronavirus OC43	MY-U1758/13	spike
43	KX538979	28377-29069	Human coronavirus OC43	MY-U1975/13	membrane
44	KX538979	29079-30425	Human coronavirus OC43	MY-U1975/13	nucleocapsid
45	KX538979	210-21496	Human coronavirus OC43	MY-U1975/13	orf1ab
46	KX538979	23640-27716	Human coronavirus OC43	MY-U1975/13	spike
47	KX538965	28380-29072	Human coronavirus OC43	MY-U208/12	membrane
48	KX538965	29082-30428	Human coronavirus OC43	MY-U208/12	nucleocapsid
49	KX538965	210-21496	Human coronavirus OC43	MY-U208/12	orf1ab
50	KX538965	23640-27719	Human coronavirus OC43	MY-U208/12	spike
51	KX538966	28377-29069	Human coronavirus OC43	MY-U236/12	membrane
52	KX538966	29079-30425	Human coronavirus OC43	MY-U236/12	nucleocapsid
53	KX538966	210-21496	Human coronavirus OC43	MY-U236/12	orf1ab
54	KX538966	23640-27716	Human coronavirus OC43	MY-U236/12	spike
55	KX538967	28380-29072	Human coronavirus OC43	MY-U413/12	membrane
56	KX538967	29082-30428	Human coronavirus OC43	MY-U413/12	nucleocapsid
57	KX538967	210-21496	Human coronavirus OC43	MY-U413/12	orf1ab
58	KX538967	23640-27719	Human coronavirus OC43	MY-U413/12	spike
59	KX538968	28380-29072	Human coronavirus OC43	MY-U464/12	membrane
60	KX538968	29082-30428	Human coronavirus OC43	MY-U464/12	nucleocapsid
61	KX538968	210-21496	Human coronavirus OC43	MY-U464/12	orf1ab
62	KX538968	23640-27719	Human coronavirus OC43	MY-U464/12	spike
63	KX538969	28380-29072	Human coronavirus OC43	MY-U523/12	membrane
64	KX538969	29082-30428	Human coronavirus OC43	MY-U523/12	nucleocapsid
65	KX538969	210-21496	Human coronavirus OC43	MY-U523/12	orf1ab
66	KX538969	23640-27719	Human coronavirus OC43	MY-U523/12	spike
67	KX538970	28377-29069	Human coronavirus OC43	MY-U710/12	membrane
68	KX538970	29079-30425	Human coronavirus OC43	MY-U710/12	nucleocapsid
69	KX538970	210-21496	Human coronavirus OC43	MY-U710/12	orf1ab
70	KX538970	23640-27716	Human coronavirus OC43	MY-U710/12	spike
71	KX538971	28380-29072	Human coronavirus OC43	MY-U732/12	membrane
72	KX538971	29082-30428	Human coronavirus OC43	MY-U732/12	nucleocapsid
73	KX538971	210-21496	Human coronavirus OC43	MY-U732/12	orf1ab
74	KX538971	23640-27719	Human coronavirus OC43	MY-U732/12	spike
75	KX538972	28377-29069	Human coronavirus OC43	MY-U774/12	membrane
76	KX538972	29079-30425	Human coronavirus OC43	MY-U774/12	nucleocapsid
77	KX538972	210-21496	Human coronavirus OC43	MY-U774/12	orf1ab
78	KX538972	23640-27716	Human coronavirus OC43	MY-U774/12	spike
79	KX538973	28380-29072	Human coronavirus OC43	MY-U868/12	membrane
80	KX538973	29082-30428	Human coronavirus OC43	MY-U868/12	nucleocapsid
81	KX538973	210-21496	Human coronavirus OC43	MY-U868/12	orf1ab
82	KX538973	23640-27719	Human coronavirus OC43	MY-U868/12	spike
83	KX538974	28380-29072	Human coronavirus OC43	MY-U945/12	membrane
84	KX538974	29082-30428	Human coronavirus OC43	MY-U945/12	nucleocapsid
85	KX538974	210-21496	Human coronavirus OC43	MY-U945/12	orf1ab
86	KX538974	23640-27719	Human coronavirus OC43	MY-U945/12	spike
87	KY554972	NA	Human coronavirus OC43	N07-1541B_433X	membrane
88	KY554972	NA	Human coronavirus OC43	N07-1541B_433X	nucleocapsid
89	KY554972	NA	Human coronavirus OC43	N07-1541B_433X	orf1ab
90	KY554972	NA	Human coronavirus OC43	N07-1541B_433X	spike
91	KY554973	NA	Human coronavirus OC43	N07-1689B_116X	membrane
92	KY554973	NA	Human coronavirus OC43	N07-1689B_116X	nucleocapsid
93	KY554973	NA	Human coronavirus OC43	N07-1689B_116X	orf1ab
94	KY554973	NA	Human coronavirus OC43	N07-1689B_116X	spike
95	KY554974	NA	Human coronavirus OC43	N08-33B_360X	membrane
96	KY554974	NA	Human coronavirus OC43	N08-33B_360X	nucleocapsid
97	KY554974	NA	Human coronavirus OC43	N08-33B_360X	orf1ab
98	KY554974	NA	Human coronavirus OC43	N08-33B_360X	spike
99	KY554975	NA	Human coronavirus OC43	N09-382B	membrane
100	KY554975	NA	Human coronavirus OC43	N09-382B	nucleocapsid
101	KY554975	NA	Human coronavirus OC43	N09-382B	orf1ab
102	KY554975	NA	Human coronavirus OC43	N09-382B	spike
103	KX344031	28377-29069	Human coronavirus OC43	OC43/human/Mex/LRTI_238/2011	membrane
104	KX344031	29079-30425	Human coronavirus OC43	OC43/human/Mex/LRTI_238/2011	nucleocapsid
105	KX344031	210-21496	Human coronavirus OC43	OC43/human/Mex/LRTI_238/2011	orf1ab
106	KX344031	23640-27716	Human coronavirus OC43	OC43/human/Mex/LRTI_238/2011	spike
107	KF530068	28361-29053	Human coronavirus OC43	OC43/human/USA/007-11/2000	membrane
108	KF530068	29063-30409	Human coronavirus OC43	OC43/human/USA/007-11/2000	nucleocapsid
109	KF530068	191-21477	Human coronavirus OC43	OC43/human/USA/007-11/2000	orf1ab
110	KF530068	23621-27706	Human coronavirus OC43	OC43/human/USA/007-11/2000	spike
111	KF530092	28366-29058	Human coronavirus OC43	OC43/human/USA/008-5/2000	membrane
112	KF530092	29068-30414	Human coronavirus OC43	OC43/human/USA/008-5/2000	nucleocapsid
113	KF530092	191-21477	Human coronavirus OC43	OC43/human/USA/008-5/2000	orf1ab
114	KF530092	23624-27694	Human coronavirus OC43	OC43/human/USA/008-5/2000	spike
115	KF530060	28366-29058	Human coronavirus OC43	OC43/human/USA/851-15/1985	membrane
116	KF530060	29068-30414	Human coronavirus OC43	OC43/human/USA/851-15/1985	nucleocapsid
117	KF530060	191-21477	Human coronavirus OC43	OC43/human/USA/851-15/1985	orf1ab
118	KF530060	23624-27694	Human coronavirus OC43	OC43/human/USA/851-15/1985	spike
119	KF530085	28358-29050	Human coronavirus OC43	OC43/human/USA/871-25/1987	membrane
120	KF530085	29060-30406	Human coronavirus OC43	OC43/human/USA/871-25/1987	nucleocapsid
121	KF530085	183-21469	Human coronavirus OC43	OC43/human/USA/871-25/1987	orf1ab
122	KF530085	23616-27686	Human coronavirus OC43	OC43/human/USA/871-25/1987	spike
123	KF530086	28366-29058	Human coronavirus OC43	OC43/human/USA/872-5/1987	membrane
124	KF530086	29068-30414	Human coronavirus OC43	OC43/human/USA/872-5/1987	nucleocapsid
125	KF530086	191-21477	Human coronavirus OC43	OC43/human/USA/872-5/1987	orf1ab
126	KF530086	23624-27694	Human coronavirus OC43	OC43/human/USA/872-5/1987	spike
127	KF530077	28366-29058	Human coronavirus OC43	OC43/human/USA/873-16/1987	membrane
128	KF530077	29068-30414	Human coronavirus OC43	OC43/human/USA/873-16/1987	nucleocapsid
129	KF530077	191-21477	Human coronavirus OC43	OC43/human/USA/873-16/1987	orf1ab
130	KF530077	23624-27694	Human coronavirus OC43	OC43/human/USA/873-16/1987	spike
131	KF530083	28366-29058	Human coronavirus OC43	OC43/human/USA/873-19/1987	membrane
132	KF530083	29068-30414	Human coronavirus OC43	OC43/human/USA/873-19/1987	nucleocapsid
133	KF530083	191-21477	Human coronavirus OC43	OC43/human/USA/873-19/1987	orf1ab
134	KF530083	23624-27694	Human coronavirus OC43	OC43/human/USA/873-19/1987	spike
135	KF530087	28366-29058	Human coronavirus OC43	OC43/human/USA/873-6/1987	membrane
136	KF530087	29068-30414	Human coronavirus OC43	OC43/human/USA/873-6/1987	nucleocapsid
137	KF530087	191-21477	Human coronavirus OC43	OC43/human/USA/873-6/1987	orf1ab
138	KF530087	23624-27694	Human coronavirus OC43	OC43/human/USA/873-6/1987	spike
139	KF530073	28366-29058	Human coronavirus OC43	OC43/human/USA/8912-37/1989	membrane
140	KF530073	29068-30414	Human coronavirus OC43	OC43/human/USA/8912-37/1989	nucleocapsid
141	KF530073	191-21477	Human coronavirus OC43	OC43/human/USA/8912-37/1989	orf1ab
142	KF530073	23624-27694	Human coronavirus OC43	OC43/human/USA/8912-37/1989	spike
143	KF530066	28353-29045	Human coronavirus OC43	OC43/human/USA/901-33/1990	membrane
144	KF530066	29055-30401	Human coronavirus OC43	OC43/human/USA/901-33/1990	nucleocapsid
145	KF530066	178-21464	Human coronavirus OC43	OC43/human/USA/901-33/1990	orf1ab
146	KF530066	23611-27681	Human coronavirus OC43	OC43/human/USA/901-33/1990	spike
147	KF530065	28366-29058	Human coronavirus OC43	OC43/human/USA/901-41/1990	membrane
148	KF530065	29068-30414	Human coronavirus OC43	OC43/human/USA/901-41/1990	nucleocapsid
149	KF530065	191-21477	Human coronavirus OC43	OC43/human/USA/901-41/1990	orf1ab
150	KF530065	23624-27694	Human coronavirus OC43	OC43/human/USA/901-41/1990	spike
151	KF530061	28366-29058	Human coronavirus OC43	OC43/human/USA/901-43/1990	membrane



1	KF530061	29068-30414	Human coronavirus OC43	OC43/human/USA/901-43/1990	nucleocapsid
2	KF530061	191-21477	Human coronavirus OC43	OC43/human/USA/901-43/1990	orf1ab
3	KF530061	23624-27694	Human coronavirus OC43	OC43/human/USA/901-43/1990	spike
4	KF530088	28367-29059	Human coronavirus OC43	OC43/human/USA/901-54/1990	membrane
5	KF530088	29069-30415	Human coronavirus OC43	OC43/human/USA/901-54/1990	nucleocapsid
6	KF530088	191-21477	Human coronavirus OC43	OC43/human/USA/901-54/1990	orf1ab
7	KF530088	23624-27706	Human coronavirus OC43	OC43/human/USA/901-54/1990	spike
8	KF530076	28381-29073	Human coronavirus OC43	OC43/human/USA/911-11/1991	membrane
9	KF530076	29083-30429	Human coronavirus OC43	OC43/human/USA/911-11/1991	nucleocapsid
10	KF530076	205-21491	Human coronavirus OC43	OC43/human/USA/911-11/1991	orf1ab
11	KF530076	23638-27720	Human coronavirus OC43	OC43/human/USA/911-11/1991	spike
12	KF530096	28364-29056	Human coronavirus OC43	OC43/human/USA/911-38/1991	membrane
13	KF530096	29066-30412	Human coronavirus OC43	OC43/human/USA/911-38/1991	nucleocapsid
14	KF530096	188-21474	Human coronavirus OC43	OC43/human/USA/911-38/1991	orf1ab
15	KF530096	23621-27703	Human coronavirus OC43	OC43/human/USA/911-38/1991	spike
16	KF530091	28381-29073	Human coronavirus OC43	OC43/human/USA/911-58/1991	membrane
17	KF530091	29083-30429	Human coronavirus OC43	OC43/human/USA/911-58/1991	nucleocapsid
18	KF530091	205-21491	Human coronavirus OC43	OC43/human/USA/911-58/1991	orf1ab
19	KF530091	23638-27720	Human coronavirus OC43	OC43/human/USA/911-58/1991	spike
20	KF530089	28384-29076	Human coronavirus OC43	OC43/human/USA/911-66/1991	membrane
21	KF530089	29086-30432	Human coronavirus OC43	OC43/human/USA/911-66/1991	nucleocapsid
22	KF530089	205-21491	Human coronavirus OC43	OC43/human/USA/911-66/1991	orf1ab
23	KF530089	23638-27723	Human coronavirus OC43	OC43/human/USA/911-66/1991	spike
24	KF530067	28383-29075	Human coronavirus OC43	OC43/human/USA/912-10/1991	membrane
25	KF530067	29085-30431	Human coronavirus OC43	OC43/human/USA/912-10/1991	nucleocapsid
26	KF530067	204-21490	Human coronavirus OC43	OC43/human/USA/912-10/1991	orf1ab
27	KF530067	23637-27722	Human coronavirus OC43	OC43/human/USA/912-10/1991	spike
28	KF530082	28370-29062	Human coronavirus OC43	OC43/human/USA/912-11/1991	membrane
29	KF530082	29072-30418	Human coronavirus OC43	OC43/human/USA/912-11/1991	nucleocapsid
30	KF530082	191-21477	Human coronavirus OC43	OC43/human/USA/912-11/1991	orf1ab
31	KF530082	23624-27709	Human coronavirus OC43	OC43/human/USA/912-11/1991	spike
32	KF530094	28370-29064	Human coronavirus OC43	OC43/human/USA/912-36/1991	membrane
33	KF530094	29072-30418	Human coronavirus OC43	OC43/human/USA/912-36/1991	nucleocapsid
34	KF530094	191-21477	Human coronavirus OC43	OC43/human/USA/912-36/1991	orf1ab
35	KF530094	23624-27709	Human coronavirus OC43	OC43/human/USA/912-36/1991	spike
36	KF530095	28377-29069	Human coronavirus OC43	OC43/human/USA/912-6/1991	membrane
37	KF530095	29079-30425	Human coronavirus OC43	OC43/human/USA/912-6/1991	nucleocapsid
38	KF530095	201-21487	Human coronavirus OC43	OC43/human/USA/912-6/1991	orf1ab
39	KF530095	23634-27716	Human coronavirus OC43	OC43/human/USA/912-6/1991	spike
40	KF530079	28370-29062	Human coronavirus OC43	OC43/human/USA/913-29/1991	membrane
41	KF530079	29072-30418	Human coronavirus OC43	OC43/human/USA/913-29/1991	nucleocapsid
42	KF530079	191-21477	Human coronavirus OC43	OC43/human/USA/913-29/1991	orf1ab
43	KF530079	23624-27709	Human coronavirus OC43	OC43/human/USA/913-29/1991	spike
44	KF530097	28366-29058	Human coronavirus OC43	OC43/human/USA/9211-43/1992	membrane
45	KF530097	29068-30414	Human coronavirus OC43	OC43/human/USA/9211-43/1992	nucleocapsid
46	KF530097	191-21477	Human coronavirus OC43	OC43/human/USA/9211-43/1992	orf1ab
47	KF530097	23624-27694	Human coronavirus OC43	OC43/human/USA/9211-43/1992	spike
48	KF530074	28363-29055	Human coronavirus OC43	OC43/human/USA/9212-33/1992	membrane
49	KF530074	29065-30411	Human coronavirus OC43	OC43/human/USA/9212-33/1992	nucleocapsid
50	KF530074	188-21474	Human coronavirus OC43	OC43/human/USA/9212-33/1992	orf1ab
51	KF530074	23621-27691	Human coronavirus OC43	OC43/human/USA/9212-33/1992	spike
52	KF530071	28367-29059	Human coronavirus OC43	OC43/human/USA/925-1/1992	membrane
53	KF530071	29069-30415	Human coronavirus OC43	OC43/human/USA/925-1/1992	nucleocapsid
54	KF530071	191-21477	Human coronavirus OC43	OC43/human/USA/925-1/1992	orf1ab
55	KF530071	23624-27706	Human coronavirus OC43	OC43/human/USA/925-1/1992	spike
56	KF530090	28366-29058	Human coronavirus OC43	OC43/human/USA/931-85/1993	membrane
57	KF530090	29068-30414	Human coronavirus OC43	OC43/human/USA/931-85/1993	nucleocapsid
58	KF530090	191-21477	Human coronavirus OC43	OC43/human/USA/931-85/1993	orf1ab
59	KF530090	23624-27694	Human coronavirus OC43	OC43/human/USA/931-85/1993	spike
60	KF530084	28367-29059	Human coronavirus OC43	OC43/human/USA/951-18/1995	membrane
61	KF530084	29069-30415	Human coronavirus OC43	OC43/human/USA/951-18/1995	nucleocapsid
62	KF530084	191-21477	Human coronavirus OC43	OC43/human/USA/951-18/1995	orf1ab
63	KF530084	23621-27706	Human coronavirus OC43	OC43/human/USA/951-18/1995	spike
64	KF530075	28366-29058	Human coronavirus OC43	OC43/human/USA/953-23/1995	membrane
65	KF530075	29068-30414	Human coronavirus OC43	OC43/human/USA/953-23/1995	nucleocapsid
66	KF530075	191-21477	Human coronavirus OC43	OC43/human/USA/953-23/1995	orf1ab
67	KF530075	23624-27694	Human coronavirus OC43	OC43/human/USA/953-23/1995	spike
68	KF530078	28353-29045	Human coronavirus OC43	OC43/human/USA/9612-29/1996	membrane
69	KF530078	29055-30401	Human coronavirus OC43	OC43/human/USA/9612-29/1996	nucleocapsid
70	KF530078	178-21464	Human coronavirus OC43	OC43/human/USA/9612-29/1996	orf1ab
71	KF530078	23611-27681	Human coronavirus OC43	OC43/human/USA/9612-29/1996	spike
72	KF530063	28366-29058	Human coronavirus OC43	OC43/human/USA/9612-48/1996	membrane
73	KF530063	29068-30414	Human coronavirus OC43	OC43/human/USA/9612-48/1996	nucleocapsid
74	KF530063	191-21477	Human coronavirus OC43	OC43/human/USA/9612-48/1996	orf1ab
75	KF530063	23621-27706	Human coronavirus OC43	OC43/human/USA/9612-48/1996	spike
76	KF530064	28366-29058	Human coronavirus OC43	OC43/human/USA/9612-9/1996	membrane
77	KF530064	29068-30414	Human coronavirus OC43	OC43/human/USA/9612-9/1996	nucleocapsid
78	KF530064	191-21477	Human coronavirus OC43	OC43/human/USA/9612-9/1996	orf1ab
79	KF530064	23624-27694	Human coronavirus OC43	OC43/human/USA/9612-9/1996	spike
80	KF530098	28367-29059	Human coronavirus OC43	OC43/human/USA/965-6/1996	membrane
81	KF530098	29069-30415	Human coronavirus OC43	OC43/human/USA/965-6/1996	nucleocapsid
82	KF530098	191-21477	Human coronavirus OC43	OC43/human/USA/965-6/1996	orf1ab
83	KF530098	23621-27706	Human coronavirus OC43	OC43/human/USA/965-6/1996	spike
84	KF530099	28367-29059	Human coronavirus OC43	OC43/human/USA/971-5/1997	membrane
85	KF530099	29069-30415	Human coronavirus OC43	OC43/human/USA/971-5/1997	nucleocapsid
86	KF530099	191-21477	Human coronavirus OC43	OC43/human/USA/971-5/1997	orf1ab
87	KF530099	23621-27706	Human coronavirus OC43	OC43/human/USA/971-5/1997	spike
88	KF530072	28366-29058	Human coronavirus OC43	OC43/human/USA/9712-13/1997	membrane
89	KF530072	29068-30414	Human coronavirus OC43	OC43/human/USA/9712-13/1997	nucleocapsid
90	KF530072	191-21477	Human coronavirus OC43	OC43/human/USA/9712-13/1997	orf1ab
91	KF530072	23624-27694	Human coronavirus OC43	OC43/human/USA/9712-13/1997	spike
92	KF530080	28366-29058	Human coronavirus OC43	OC43/human/USA/9712-31/1997	membrane
93	KF530080	29068-30414	Human coronavirus OC43	OC43/human/USA/9712-31/1997	nucleocapsid
94	KF530080	191-21477	Human coronavirus OC43	OC43/human/USA/9712-31/1997	orf1ab
95	KF530080	23624-27694	Human coronavirus OC43	OC43/human/USA/9712-31/1997	spike
96	KF530069	28367-29059	Human coronavirus OC43	OC43/human/USA/982-4/1998	membrane
97	KF530069	29069-30415	Human coronavirus OC43	OC43/human/USA/982-4/1998	nucleocapsid
98	KF530069	191-21477	Human coronavirus OC43	OC43/human/USA/982-4/1998	orf1ab
99	KF530069	23621-27706	Human coronavirus OC43	OC43/human/USA/982-4/1998	spike
100	KF530070	28362-29054	Human coronavirus OC43	OC43/human/USA/991-19/1999	membrane
101	KF530070	29064-30410	Human coronavirus OC43	OC43/human/USA/991-19/1999	nucleocapsid
102	KF530070	192-21478	Human coronavirus OC43	OC43/human/USA/991-19/1999	orf1ab
103	KF530070	23622-27707	Human coronavirus OC43	OC43/human/USA/991-19/1999	spike
104	KF530081	28360-29052	Human coronavirus OC43	OC43/human/USA/991-5/1999	membrane
105	KF530081	29062-30408	Human coronavirus OC43	OC43/human/USA/991-5/1999	nucleocapsid
106	KF530081	190-21476	Human coronavirus OC43	OC43/human/USA/991-5/1999	orf1ab
107	KF530081	23620-27705	Human coronavirus OC43	OC43/human/USA/991-5/1999	spike
108	KY684759	NA	Human coronavirus OC43	SC2269	membrane
109	KY684759	NA	Human coronavirus OC43	SC2269	nucleocapsid
110	KY684759	NA	Human coronavirus OC43	SC2269	orf1ab
111	KY684759	NA	Human coronavirus OC43	SC2269	spike

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KY967361	NA	Human coronavirus OC43	SC2345	membrane
KY967361	NA	Human coronavirus OC43	SC2345	nucleocapsid
KY967361	NA	Human coronavirus OC43	SC2345	orf1ab
KY967361	NA	Human coronavirus OC43	SC2345	spike
KY967360	NA	Human coronavirus OC43	SC2476	membrane
KY967360	NA	Human coronavirus OC43	SC2476	nucleocapsid
KY967360	NA	Human coronavirus OC43	SC2476	orf1ab
KY967360	NA	Human coronavirus OC43	SC2476	spike
KY983583	NA	Human coronavirus OC43	SC2481	membrane
KY983583	NA	Human coronavirus OC43	SC2481	nucleocapsid
KY983583	NA	Human coronavirus OC43	SC2481	orf1ab
KY983583	NA	Human coronavirus OC43	SC2481	spike
KY967359	NA	Human coronavirus OC43	SC2730	membrane
KY967359	NA	Human coronavirus OC43	SC2730	nucleocapsid
KY967359	NA	Human coronavirus OC43	SC2730	orf1ab
KY967359	NA	Human coronavirus OC43	SC2730	spike
KY967358	NA	Human coronavirus OC43	SC2770	membrane
KY967358	NA	Human coronavirus OC43	SC2770	nucleocapsid
KY967358	NA	Human coronavirus OC43	SC2770	orf1ab
KY967358	NA	Human coronavirus OC43	SC2770	spike
KY983585	NA	Human coronavirus OC43	SC2854	membrane
KY983585	NA	Human coronavirus OC43	SC2854	nucleocapsid
KY983585	NA	Human coronavirus OC43	SC2854	orf1ab
KY983585	NA	Human coronavirus OC43	SC2854	spike
KY967356	NA	Human coronavirus OC43	SC2924	membrane
KY967356	NA	Human coronavirus OC43	SC2924	nucleocapsid
KY967356	NA	Human coronavirus OC43	SC2924	orf1ab
KY967356	NA	Human coronavirus OC43	SC2924	spike
KY983588	NA	Human coronavirus OC43	SC3118	membrane
KY983588	NA	Human coronavirus OC43	SC3118	nucleocapsid
KY983588	NA	Human coronavirus OC43	SC3118	orf1ab
KY983588	NA	Human coronavirus OC43	SC3118	spike
KY369906	NA	Human coronavirus OC43	SC622	membrane
KY369906	NA	Human coronavirus OC43	SC622	nucleocapsid
KY369906	NA	Human coronavirus OC43	SC622	orf1ab
KY369906	NA	Human coronavirus OC43	SC622	spike
KY369905	NA	Human coronavirus OC43	SC831	membrane
KY369905	NA	Human coronavirus OC43	SC831	nucleocapsid
KY369905	NA	Human coronavirus OC43	SC831	orf1ab
KY369905	NA	Human coronavirus OC43	SC831	spike
KY369907	NA	Human coronavirus OC43	SC9741	membrane
KY369907	NA	Human coronavirus OC43	SC9741	nucleocapsid
KY369907	NA	Human coronavirus OC43	SC9741	orf1ab
KY369907	NA	Human coronavirus OC43	SC9741	spike
MG977451	28386-29078	Human coronavirus OC43	TNP 12636	membrane
MG977451	29088-30434	Human coronavirus OC43	TNP 12636	nucleocapsid
MG977451	204-21490	Human coronavirus OC43	TNP 12636	orf1ab
MG977451	23646-27725	Human coronavirus OC43	TNP 12636	spike
MG977452	28368-29060	Human coronavirus OC43	TNP 12643	membrane
MG977452	29070-30416	Human coronavirus OC43	TNP 12643	nucleocapsid
MG977452	186-21472	Human coronavirus OC43	TNP 12643	orf1ab
MG977452	23628-27707	Human coronavirus OC43	TNP 12643	spike
MG977444	28248-28940	Human coronavirus OC43	TNP F1778_2	membrane
MG977444	28950-30296	Human coronavirus OC43	TNP F1778_2	nucleocapsid
MG977444	66-21352	Human coronavirus OC43	TNP F1778_2	orf1ab
MG977444	23508-27587	Human coronavirus OC43	TNP F1778_2	spike
MG977445	28343-29035	Human coronavirus OC43	TNP F1790_2	membrane
MG977445	29045-30391	Human coronavirus OC43	TNP F1790_2	nucleocapsid
MG977445	161-21447	Human coronavirus OC43	TNP F1790_2	orf1ab
MG977445	23603-27682	Human coronavirus OC43	TNP F1790_2	spike
MG977447	28369-29061	Human coronavirus OC43	TNP F1832_2	membrane
MG977447	29071-30417	Human coronavirus OC43	TNP F1832_2	nucleocapsid
MG977447	187-21473	Human coronavirus OC43	TNP F1832_2	orf1ab
MG977447	23629-27708	Human coronavirus OC43	TNP F1832_2	spike
MG977449	28385-29077	Human coronavirus OC43	TNP F1834_2	membrane
MG977449	29087-30433	Human coronavirus OC43	TNP F1834_2	nucleocapsid
MG977449	203-21489	Human coronavirus OC43	TNP F1834_2	orf1ab
MG977449	23645-27724	Human coronavirus OC43	TNP F1834_2	spike
MF083115	28345-29037	Porcine hemagglutinating encephalomyelitis virus	CC14	membrane
MF083115	29047-30396	Porcine hemagglutinating encephalomyelitis virus	CC14	nucleocapsid
MF083115	211-21494	Porcine hemagglutinating encephalomyelitis virus	CC14	orf1ab
MF083115	23643-27692	Porcine hemagglutinating encephalomyelitis virus	CC14	spike
KY994645	28345-29037	Porcine hemagglutinating encephalomyelitis virus	JL2008	membrane
KY994645	29047-30396	Porcine hemagglutinating encephalomyelitis virus	JL2008	nucleocapsid
KY994645	211-21494	Porcine hemagglutinating encephalomyelitis virus	JL2008	orf1ab
KY994645	23643-27692	Porcine hemagglutinating encephalomyelitis virus	JL2008	spike
KY419104	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU0331	membrane
KY419104	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU0331	nucleocapsid
KY419104	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU0331	orf1ab
KY419104	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU0331	spike
KY419105	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU0582	membrane
KY419105	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU0582	nucleocapsid
KY419105	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU0582	orf1ab
KY419105	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU0582	spike
KY419110	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1362	membrane
KY419110	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1362	nucleocapsid
KY419110	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1362	orf1ab
KY419110	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1362	spike
KY419113	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1582	membrane
KY419113	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1582	nucleocapsid
KY419113	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1582	orf1ab
KY419113	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1582	spike
KY419109	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1655	membrane
KY419109	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1655	nucleocapsid
KY419109	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1655	orf1ab
KY419109	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1655	spike
KY419111	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1727	membrane
KY419111	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1727	nucleocapsid
KY419111	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1727	orf1ab
KY419111	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1727	spike
KY419112	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1765	membrane
KY419112	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1765	nucleocapsid
KY419112	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1765	orf1ab
KY419112	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1765	spike
KY419106	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1785	membrane
KY419106	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1785	nucleocapsid
KY419106	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1785	orf1ab
KY419106	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU1785	spike
KY419103	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU25049	membrane
KY419103	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU25049	nucleocapsid
KY419103	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-1STOSU25049	orf1ab

741	KY419103	NA	Porcine hemagglutinating encephalomyelitis virus	PHEV CoV USA-15TOSU25049	spike
742	EF424621	28675-29367	Sable antelope coronavirus US/OH1/2003	US/OH1/2003	membrane
743	EF424621	29377-30723	Sable antelope coronavirus US/OH1/2003	US/OH1/2003	nucleocapsid
744	EF424621	23626-27717	Sable antelope coronavirus US/OH1/2003	US/OH1/2003	spike
745	FJ425188	NA	Sambar deer coronavirus US/OH-WD388-TC/1994	UNKNOWN-FJ425188	membrane
746	FJ425188	NA	Sambar deer coronavirus US/OH-WD388-TC/1994	UNKNOWN-FJ425188	nucleocapsid
747	FJ425188	NA	Sambar deer coronavirus US/OH-WD388-TC/1994	UNKNOWN-FJ425188	spike
748	FJ425190	NA	Sambar deer coronavirus US/OH-WD388-TC/1994	UNKNOWN-FJ425190	membrane
749	FJ425190	NA	Sambar deer coronavirus US/OH-WD388-TC/1994	UNKNOWN-FJ425190	nucleocapsid
750	FJ425190	NA	Sambar deer coronavirus US/OH-WD388-TC/1994	UNKNOWN-FJ425190	spike
751	FJ425189	NA	Sambar deer coronavirus US/OH-WD388/1994	UNKNOWN-FJ425189	membrane
752	FJ425189	NA	Sambar deer coronavirus US/OH-WD388/1994	UNKNOWN-FJ425189	nucleocapsid
753	FJ425189	NA	Sambar deer coronavirus US/OH-WD388/1994	UNKNOWN-FJ425189	spike
754	MG518518	NA	Water deer coronavirus W17-18 orflab		
755	MG518518	NA	Water deer coronavirus W17-18 membrane		
756	MG518518	NA	Water deer coronavirus W17-18 nucleocapsid		
757	MG518518	NA	Water deer coronavirus W17-18 spike		
758	FJ425185	NA	Waterbuck coronavirus US/OH-WD358-GnC/1994	UNKNOWN-FJ425185	membrane
759	FJ425185	NA	Waterbuck coronavirus US/OH-WD358-GnC/1994	UNKNOWN-FJ425185	nucleocapsid
760	FJ425185	NA	Waterbuck coronavirus US/OH-WD358-GnC/1994	UNKNOWN-FJ425185	spike
761	FJ425184	NA	Waterbuck coronavirus US/OH-WD358-TC/1994	UNKNOWN-FJ425184	membrane
762	FJ425184	NA	Waterbuck coronavirus US/OH-WD358-TC/1994	UNKNOWN-FJ425184	nucleocapsid
763	FJ425184	NA	Waterbuck coronavirus US/OH-WD358-TC/1994	UNKNOWN-FJ425184	spike
764	FJ425186	NA	Waterbuck coronavirus US/OH-WD358/1994	UNKNOWN-FJ425186	membrane
765	FJ425186	NA	Waterbuck coronavirus US/OH-WD358/1994	UNKNOWN-FJ425186	nucleocapsid
766	FJ425186	NA	Waterbuck coronavirus US/OH-WD358/1994	UNKNOWN-FJ425186	spike
767	FJ425187	NA	White-tailed deer coronavirus US/OH-WD470/1994	UNKNOWN-FJ425187	membrane
768	FJ425187	NA	White-tailed deer coronavirus US/OH-WD470/1994	UNKNOWN-FJ425187	nucleocapsid
769	FJ425187	NA	White-tailed deer coronavirus US/OH-WD470/1994	UNKNOWN-FJ425187	spike
770	MH810163	NA	Yak coronavirus YAK/HY24/CH/2017		membrane
771	MH810163	NA	Yak coronavirus YAK/HY24/CH/2017		nucleocapsid
772	MH810163	NA	Yak coronavirus YAK/HY24/CH/2017		spike
773	AF220295	28707-29399	Bovine coronavirus Quebec		membrane
774	AF220295	29409-30755	Bovine coronavirus Quebec		nucleocapsid
775	AF220295	23655-27746	Bovine coronavirus Quebec		spike
776	FJ938065	NA	Bovine respiratory coronavirus AH187	AH187	membrane
777	FJ938065	NA	Bovine respiratory coronavirus AH187	AH187	nucleocapsid
778	FJ938065	NA	Bovine respiratory coronavirus AH187	AH187	orflab
779	FJ938065	NA	Bovine respiratory coronavirus AH187	AH187	spike
780	FJ938066	NA	Bovine respiratory coronavirus bovine/US/OH-440-TC/1996	bovine/US/OH-440-TC/1996	membrane
781	FJ938066	NA	Bovine respiratory coronavirus bovine/US/OH-440-TC/1996	bovine/US/OH-440-TC/1996	nucleocapsid
782	FJ938066	NA	Bovine respiratory coronavirus bovine/US/OH-440-TC/1996	bovine/US/OH-440-TC/1996	orflab
783	FJ938066	NA	Bovine respiratory coronavirus bovine/US/OH-440-TC/1996	bovine/US/OH-440-TC/1996	spike
784	EF446615	210-21595	Equine coronavirus NC99		orflab
785	EF446615	28661-29353	Equine coronavirus NC99		membrane
786	EF446615	29363-30703	Equine coronavirus NC99		nucleocapsid
787	EF446615	23744-27835	Equine coronavirus NC99		spike
788	AY391777	28402-29094	Human coronavirus OC43	ATCC VR-759	membrane
789	AY391777	29104-30450	Human coronavirus OC43	ATCC VR-759	nucleocapsid
790	AY391777	23644-27729	Human coronavirus OC43	ATCC VR-759	spike
791	AY391777	NA	Human coronavirus OC43	ATCC VR-759	orflab
792	JN129834	28374-29066	Human coronavirus OC43	HK04-01	membrane
793	JN129834	29076-30422	Human coronavirus OC43	HK04-01	nucleocapsid
794	JN129834	NA	Human coronavirus OC43	HK04-01	orflab
795	JN129834	23628-27713	Human coronavirus OC43	HK04-01	spike
796	DQ011855	28141-28833	Porcine hemagglutinating encephalomyelitis virus	VW572	membrane
797	DQ011855	28843-30192	Porcine hemagglutinating encephalomyelitis virus	VW572	nucleocapsid
798	DQ011855	NA	Porcine hemagglutinating encephalomyelitis virus	VW572	orflab
799	DQ011855	23427-27476	Porcine hemagglutinating encephalomyelitis virus	VW572	spike
800	NC_022643	27869-28525	Betacoronavirus Erinaeus/VMC/DEU/2012	ErinaeusCoV/2012-216/GER/2012	membrane
801	NC_022643	28580-29854	Betacoronavirus Erinaeus/VMC/DEU/2012	ErinaeusCoV/2012-216/GER/2012	nucleocapsid
802	NC_022643	21637-25629	Betacoronavirus Erinaeus/VMC/DEU/2012	ErinaeusCoV/2012-216/GER/2012	spike
803	NC_022643	241-21719	Betacoronavirus Erinaeus/VMC/DEU/2012	ErinaeusCoV/2012-216/GER/2012	orflab
804	NC_026011	28908-29603	Betacoronavirus HKU24	HKU24-R05005Imembrane	
805	NC_026011	29613-30944	Betacoronavirus HKU24	HKU24-R05005Inucleocapsid	
806	NC_026011	213-21637	Betacoronavirus HKU24	HKU24-R05005Iorflab	
807	NC_026011	23777-27853	Betacoronavirus HKU24	HKU24-R05005Ispike	
808	KM349743	28908-29603	Betacoronavirus HKU24	HKU24-R05009Imembrane	
809	KM349743	29613-30944	Betacoronavirus HKU24	HKU24-R05009Inucleocapsid	
810	KM349743	213-21637	Betacoronavirus HKU24	HKU24-R05009Iorflab	
811	KM349743	23777-27853	Betacoronavirus HKU24	HKU24-R05009Ispike	
812	KM349744	28908-29603	Betacoronavirus HKU24	HKU24-R05010Imembrane	
813	KM349744	29613-30944	Betacoronavirus HKU24	HKU24-R05010Inucleocapsid	
814	KM349744	213-21637	Betacoronavirus HKU24	HKU24-R05010Iorflab	
815	KM349744	23777-27853	Betacoronavirus HKU24	HKU24-R05010Ispike	
816	KT779555	27594-28265	Human coronavirus HKU1	BJ01-p3	membrane
817	KT779555	28281-29606	Human coronavirus HKU1	BJ01-p3	nucleocapsid
818	KT779555	200-21714	Human coronavirus HKU1	BJ01-p3	orflab
819	KT779555	22903-26973	Human coronavirus HKU1	BJ01-p3	spike
820	KT779556	27594-28265	Human coronavirus HKU1	BJ01-p9	membrane
821	KT779556	28281-29606	Human coronavirus HKU1	BJ01-p9	nucleocapsid
822	KT779556	200-21714	Human coronavirus HKU1	BJ01-p9	orflab
823	KT779556	22903-26973	Human coronavirus HKU1	BJ01-p9	spike
824	HM034837	27597-28268	Human coronavirus HKU1	Caen1	membrane
825	HM034837	28284-29609	Human coronavirus HKU1	Caen1	nucleocapsid
826	HM034837	170-21717	Human coronavirus HKU1	Caen1	orflab
827	HM034837	22906-26976	Human coronavirus HKU1	Caen1	spike
828	NC_006577	27633-28304	Human coronavirus HKU1	HKU1	membrane
829	NC_006577	28320-29645	Human coronavirus HKU1	HKU1	nucleocapsid
830	NC_006577	206-21753	Human coronavirus HKU1	HKU1	orflab
831	NC_006577	22942-27012	Human coronavirus HKU1	HKU1	spike
832	KF686341	27563-28234	Human coronavirus HKU1	HKU1/human/USA/HKU1-10/2010	membrane
833	KF686341	28250-29575	Human coronavirus HKU1	HKU1/human/USA/HKU1-10/2010	nucleocapsid
834	KF686341	181-21683	Human coronavirus HKU1	HKU1/human/USA/HKU1-10/2010	orflab
835	KF686341	22872-26942	Human coronavirus HKU1	HKU1/human/USA/HKU1-10/2010	spike
836	KF686342	27473-28144	Human coronavirus HKU1	HKU1/human/USA/HKU1-11/2009	membrane
837	KF686342	28160-29485	Human coronavirus HKU1	HKU1/human/USA/HKU1-11/2009	nucleocapsid
838	KF686342	181-21593	Human coronavirus HKU1	HKU1/human/USA/HKU1-11/2009	orflab
839	KF686342	22782-26852	Human coronavirus HKU1	HKU1/human/USA/HKU1-11/2009	spike
840	KF686346	27713-28384	Human coronavirus HKU1	HKU1/human/USA/HKU1-12/2010	membrane
841	KF686346	28400-29725	Human coronavirus HKU1	HKU1/human/USA/HKU1-12/2010	nucleocapsid
842	KF686346	181-21833	Human coronavirus HKU1	HKU1/human/USA/HKU1-12/2010	orflab
843	KF686346	23022-27092	Human coronavirus HKU1	HKU1/human/USA/HKU1-12/2010	spike
844	KF686343	27713-28384	Human coronavirus HKU1	HKU1/human/USA/HKU1-13/2010	membrane
845	KF686343	28400-29725	Human coronavirus HKU1	HKU1/human/USA/HKU1-13/2010	nucleocapsid
846	KF686343	181-21833	Human coronavirus HKU1	HKU1/human/USA/HKU1-13/2010	orflab
847	KF686343	23022-27092	Human coronavirus HKU1	HKU1/human/USA/HKU1-13/2010	spike
848	KF686344	27425-28096	Human coronavirus HKU1	HKU1/human/USA/HKU1-15/2009	membrane
849	KF686344	28112-29437	Human coronavirus HKU1	HKU1/human/USA/HKU1-15/2009	nucleocapsid
850	KF686344	181-21545	Human coronavirus HKU1	HKU1/human/USA/HKU1-15/2009	orflab
851	KF686344	22734-26804	Human coronavirus HKU1	HKU1/human/USA/HKU1-15/2009	spike

KF430201	27665-28336	Human coronavirus HKU1	HKU1/human/USA/HKU1-18/2010	membrane
KF430201	28352-29677	Human coronavirus HKU1	HKU1/human/USA/HKU1-18/2010	nucleocapsid
KF430201	196-21788	Human coronavirus HKU1	HKU1/human/USA/HKU1-18/2010	orf1ab
KF430201	22977-27044	Human coronavirus HKU1	HKU1/human/USA/HKU1-18/2010	spike
KF686340	27653-28324	Human coronavirus HKU1	HKU1/human/USA/HKU1-5/2009	membrane
KF686340	28340-29665	Human coronavirus HKU1	HKU1/human/USA/HKU1-5/2009	nucleocapsid
KF686340	181-21773	Human coronavirus HKU1	HKU1/human/USA/HKU1-5/2009	orf1ab
KF686340	22962-27032	Human coronavirus HKU1	HKU1/human/USA/HKU1-5/2009	spike
KY674921	NA	Human coronavirus HKU1	N08-87	membrane
KY674921	NA	Human coronavirus HKU1	N08-87	nucleocapsid
KY674921	NA	Human coronavirus HKU1	N08-87	orf1ab
KY674921	NA	Human coronavirus HKU1	N08-87	spike
KY674943	NA	Human coronavirus HKU1	N09-1605B	membrane
KY674943	NA	Human coronavirus HKU1	N09-1605B	nucleocapsid
KY674943	NA	Human coronavirus HKU1	N09-1605B	orf1ab
KY674943	NA	Human coronavirus HKU1	N09-1605B	spike
KY674942	NA	Human coronavirus HKU1	N09-1627B	membrane
KY674942	NA	Human coronavirus HKU1	N09-1627B	nucleocapsid
KY674942	NA	Human coronavirus HKU1	N09-1627B	orf1ab
KY674942	NA	Human coronavirus HKU1	N09-1627B	spike
KY674941	NA	Human coronavirus HKU1	N09-1663B	membrane
KY674941	NA	Human coronavirus HKU1	N09-1663B	nucleocapsid
KY674941	NA	Human coronavirus HKU1	N09-1663B	orf1ab
KY674941	NA	Human coronavirus HKU1	N09-1663B	spike
MK167038	NA	Human coronavirus HKU1	SC2521	membrane
MK167038	NA	Human coronavirus HKU1	SC2521	nucleocapsid
MK167038	NA	Human coronavirus HKU1	SC2521	orf1ab
MK167038	NA	Human coronavirus HKU1	SC2521	spike
MH940245	27518-28189	Human coronavirus HKU1	SI17244	membrane
MH940245	28205-29530	Human coronavirus HKU1	SI17244	nucleocapsid
MH940245	196-21653	Human coronavirus HKU1	SI17244	orf1ab
MH940245	22858-26913	Human coronavirus HKU1	SI17244	spike
KC776174	27807-28466	Human betacoronavirus 2c Jordan-N3/2012	Jordan-N3/2012	membrane
KC776174	28520-29761	Human betacoronavirus 2c Jordan-N3/2012	Jordan-N3/2012	nucleocapsid
KC776174	233-21468	Human betacoronavirus 2c Jordan-N3/2012	Jordan-N3/2012	orf1ab
KC776174	21410-25471	Human betacoronavirus 2c Jordan-N3/2012	Jordan-N3/2012	spike
KC869678	27840-28499	Coronavirus Neoromicia/PML-PHE1/RSA/2011	Neoromicia/PML-PHE1/RSA/2011	membrane
KC869678	28557-29801	Coronavirus Neoromicia/PML-PHE1/RSA/2011	Neoromicia/PML-PHE1/RSA/2011	nucleocapsid
KC869678	281-21528	Coronavirus Neoromicia/PML-PHE1/RSA/2011	Neoromicia/PML-PHE1/RSA/2011	orf1ab
KC869678	21470-25504	Coronavirus Neoromicia/PML-PHE1/RSA/2011	Neoromicia/PML-PHE1/RSA/2011	spike
KC667074	NA	Human betacoronavirus 2c England-Qatar/2012	England/Qatar/2012	membrane
KC667074	NA	Human betacoronavirus 2c England-Qatar/2012	England/Qatar/2012	nucleocapsid
KC667074	NA	Human betacoronavirus 2c England-Qatar/2012	England/Qatar/2012	orf1ab
KC667074	NA	Human betacoronavirus 2c England-Qatar/2012	England/Qatar/2012	spike
KJ614529	27838-28497	Human betacoronavirus 2c Jordan-N3/2012	Jordan-N3/2012	membrane
KJ614529	28551-29792	Human betacoronavirus 2c Jordan-N3/2012	Jordan-N3/2012	nucleocapsid
KJ614529	264-21499	Human betacoronavirus 2c Jordan-N3/2012	Jordan-N3/2012	orf1ab
KJ614529	21441-25502	Human betacoronavirus 2c Jordan-N3/2012	Jordan-N3/2012	spike
KP209310	27853-28512	Middle East respiratory syndrome coronavirus	Abu Dhabi/Gayathi_UAE_2_2014	membrane
KP209310	28566-29807	Middle East respiratory syndrome coronavirus	Abu Dhabi/Gayathi_UAE_2_2014	nucleocapsid
KP209310	279-21514	Middle East respiratory syndrome coronavirus	Abu Dhabi/Gayathi_UAE_2_2014	orf1ab
KP209310	21456-25517	Middle East respiratory syndrome coronavirus	Abu Dhabi/Gayathi_UAE_2_2014	spike
KP209308	27853-28512	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_16_2014	membrane
KP209308	28566-29807	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_16_2014	nucleocapsid
KP209308	279-21514	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_16_2014	orf1ab
KP209308	21456-25517	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_16_2014	spike
KP209307	27853-28512	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_18_2014	membrane
KP209307	28566-29807	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_18_2014	nucleocapsid
KP209307	279-21514	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_18_2014	orf1ab
KP209307	21456-25517	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_18_2014	spike
KP209313	27853-28512	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_26_2014	membrane
KP209313	28566-29807	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_26_2014	nucleocapsid
KP209313	279-21514	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_26_2014	orf1ab
KP209313	21456-25517	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_26_2014	spike
KP209306	27853-28512	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_8_2014	membrane
KP209306	28566-29807	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_8_2014	nucleocapsid
KP209306	279-21514	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_8_2014	orf1ab
KP209306	21456-25517	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_8_2014	spike
KP209312	27853-28512	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_9_2013	membrane
KP209312	28566-29807	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_9_2013	nucleocapsid
KP209312	279-21514	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_9_2013	orf1ab
KP209312	21456-25517	Middle East respiratory syndrome coronavirus	Abu Dhabi_UAE_9_2013	spike
KF600627	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_12_2013	membrane
KF600627	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_12_2013	nucleocapsid
KF600627	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_12_2013	orf1ab
KF600627	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_12_2013	spike
KF600645	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_15_2013	membrane
KF600645	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_15_2013	nucleocapsid
KF600645	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_15_2013	orf1ab
KF600645	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_15_2013	spike
KF600644	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_16_2013	membrane
KF600644	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_16_2013	nucleocapsid
KF600644	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_16_2013	orf1ab
KF600644	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_16_2013	spike
KF600647	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_17_2013	membrane
KF600647	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_17_2013	nucleocapsid
KF600647	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_17_2013	orf1ab
KF600647	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_17_2013	spike
KF600651	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_18_2013	membrane
KF600651	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_18_2013	nucleocapsid
KF600651	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_18_2013	orf1ab
KF600651	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_18_2013	spike
KF600632	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_19_2013	membrane
KF600632	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_19_2013	nucleocapsid
KF600632	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_19_2013	orf1ab
KF600632	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_19_2013	spike
KF186567	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_1_2013	membrane
KF186567	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_1_2013	nucleocapsid
KF186567	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_1_2013	orf1ab
KF186567	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_1_2013	spike
KF600634	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_21_2013	membrane
KF600634	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_21_2013	nucleocapsid
KF600634	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_21_2013	orf1ab
KF600634	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_21_2013	spike
KJ156866	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_25_2013	membrane
KJ156866	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_25_2013	nucleocapsid
KJ156866	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_25_2013	orf1ab
KJ156866	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_25_2013	spike
KF186566	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_2_2013	membrane
KF186566	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_2_2013	nucleocapsid
KF186566	NA	Middle East respiratory syndrome coronavirus	Al-Hasa_2_2013	orf1ab







KT751244	27838-28497	Middle East respiratory syndrome coronavirus	D2731.3/14	membrane	
KT751244	28551-29792	Middle East respiratory syndrome coronavirus	D2731.3/14	nucleocapsid	
KT751244	264-21499	Middle East respiratory syndrome coronavirus	D2731.3/14	orflab	
KT751244	21441-25502	Middle East respiratory syndrome coronavirus	D2731.3/14	spike	
KX108940	27834-28493	Middle East respiratory syndrome coronavirus	D374/15	membrane	
KX108940	28547-29788	Middle East respiratory syndrome coronavirus	D374/15	nucleocapsid	
KX108940	260-21495	Middle East respiratory syndrome coronavirus	D374/15	orflab	
KX108940	21437-25498	Middle East respiratory syndrome coronavirus	D374/15	spike	
KX108941	27834-28493	Middle East respiratory syndrome coronavirus	D383/15	membrane	
KX108941	28547-29788	Middle East respiratory syndrome coronavirus	D383/15	nucleocapsid	
KX108941	262-21497	Middle East respiratory syndrome coronavirus	D383/15	orflab	
KX108941	21439-25500	Middle East respiratory syndrome coronavirus	D383/15	spike	
KX108942	27834-28493	Middle East respiratory syndrome coronavirus	D389/15	membrane	
KX108942	28547-29788	Middle East respiratory syndrome coronavirus	D389/15	nucleocapsid	
KX108942	260-21495	Middle East respiratory syndrome coronavirus	D389/15	orflab	
KX108942	21437-25498	Middle East respiratory syndrome coronavirus	D389/15	spike	
KX108943	27823-28482	Middle East respiratory syndrome coronavirus	D998/15	membrane	
KX108943	28536-29777	Middle East respiratory syndrome coronavirus	D998/15	nucleocapsid	
KX108943	258-21493	Middle East respiratory syndrome coronavirus	D998/15	orflab	
KX108943	21435-25496	Middle East respiratory syndrome coronavirus	D998/15	spike	
KM015348	NA	Middle East respiratory syndrome coronavirus	England/2/2013	membrane	
KM015348	NA	Middle East respiratory syndrome coronavirus	England/2/2013	nucleocapsid	
KM015348	NA	Middle East respiratory syndrome coronavirus	England/2/2013	orflab	
KM015348	NA	Middle East respiratory syndrome coronavirus	England/2/2013	spike	
KM210278	NA	Middle East respiratory syndrome coronavirus	England/3/2013	membrane	
KM210278	NA	Middle East respiratory syndrome coronavirus	England/3/2013	nucleocapsid	
KM210278	NA	Middle East respiratory syndrome coronavirus	England/3/2013	orflab	
KM210278	NA	Middle East respiratory syndrome coronavirus	England/3/2013	spike	
KM210277	NA	Middle East respiratory syndrome coronavirus	England/4/2013	membrane	
KM210277	NA	Middle East respiratory syndrome coronavirus	England/4/2013	nucleocapsid	
KM210277	NA	Middle East respiratory syndrome coronavirus	England/4/2013	orflab	
KM210277	NA	Middle East respiratory syndrome coronavirus	England/4/2013	spike	
KJ829365	27853-28512	Middle East respiratory syndrome coronavirus	Florida/USA-2_Saudi Arabia_2014	membrane	
KJ829365	28566-29807	Middle East respiratory syndrome coronavirus	Florida/USA-2_Saudi Arabia_2014	nucleocapsid	
KJ829365	279-21514	Middle East respiratory syndrome coronavirus	Florida/USA-2_Saudi Arabia_2014	orflab	
KJ829365	21456-25517	Middle East respiratory syndrome coronavirus	Florida/USA-2_Saudi Arabia_2014	spike	
KP223131	27853-28512	Middle East respiratory syndrome coronavirus	Florida/USA-2_Saudi Arabia_2014	membrane	
KP223131	28566-29807	Middle East respiratory syndrome coronavirus	Florida/USA-2_Saudi Arabia_2014	nucleocapsid	
KP223131	279-21514	Middle East respiratory syndrome coronavirus	Florida/USA-2_Saudi Arabia_2014	orflab	
KP223131	21456-25517	Middle East respiratory syndrome coronavirus	Florida/USA-2_Saudi Arabia_2014	spike	
KF745068	NA	Middle East respiratory syndrome coronavirus	FRA/UAE	membrane	
KF745068	NA	Middle East respiratory syndrome coronavirus	FRA/UAE	nucleocapsid	
KF745068	NA	Middle East respiratory syndrome coronavirus	FRA/UAE	orflab	
KF745068	NA	Middle East respiratory syndrome coronavirus	FRA/UAE	spike	
KF600628	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_1_2013	membrane	
KF600628	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_1_2013	nucleocapsid	
KF600628	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_1_2013	orflab	
KF600628	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_1_2013	spike	
KJ156910	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_2_2013	membrane	
KJ156910	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_2_2013	nucleocapsid	
KJ156910	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_2_2013	orflab	
KJ156910	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_2_2013	spike	
KJ156874	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_6_2013	membrane	
KJ156874	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_6_2013	nucleocapsid	
KJ156874	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_6_2013	orflab	
KJ156874	NA	Middle East respiratory syndrome coronavirus	Hafri-Al-Batin_6_2013	spike	
KJ361500	NA	Middle East respiratory syndrome coronavirus	Hu-France (UAE) - FRA1_1627-2013_BAL_Sanger	membrane	
KJ361500	NA	Middle East respiratory syndrome coronavirus	Hu-France (UAE) - FRA1_1627-2013_BAL_Sanger	nucleocapsid	
KJ361500	NA	Middle East respiratory syndrome coronavirus	Hu-France (UAE) - FRA1_1627-2013_BAL_Sanger	spike	
KJ361502	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_InSpU_Sanger	membrane	
KJ361502	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_InSpU_Sanger	nucleocapsid	
KJ361502	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_InSpU_Sanger	spike	
KJ361501	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_IS HTS	membrane	
KJ361501	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_IS HTS	nucleocapsid	
KJ361501	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_IS HTS	spike	
KJ361503	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_Isolate_Sanger	membrane	
KJ361503	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_Isolate_Sanger	nucleocapsid	
KJ361503	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_Isolate_Sanger	spike	
KT806046	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Hufuf-KSA-11002/2015	membrane	
KT806046	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Hufuf-KSA-11002/2015	nucleocapsid	
KT806046	257-21492	Middle East respiratory syndrome coronavirus	Hu/Hufuf-KSA-11002/2015	orflab	
KT806046	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Hufuf-KSA-11002/2015	spike	
KT806047	27822-28481	Middle East respiratory syndrome coronavirus	Hu/Hufuf-KSA-9158/2015	membrane	
KT806047	28535-29776	Middle East respiratory syndrome coronavirus	Hu/Hufuf-KSA-9158/2015	nucleocapsid	
KT806047	257-21492	Middle East respiratory syndrome coronavirus	Hu/Hufuf-KSA-9158/2015	orflab	
KT806047	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Hufuf-KSA-9158/2015	spike	
KU851859	27811-28470	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-3RS2702/2015	membrane	
KU851859	28524-29765	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-3RS2702/2015	nucleocapsid	
KU851859	257-21492	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-3RS2702/2015	orflab	
KU851859	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-3RS2702/2015	spike	
KT806044	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C20843/2015	membrane	
KT806044	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C20843/2015	nucleocapsid	
KT806044	257-21492	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C20843/2015	orflab	
KT806044	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C20843/2015	spike	
KT806055	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C20860/2015	membrane	
KT806055	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C20860/2015	nucleocapsid	
KT806055	257-21492	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C20860/2015	orflab	
KT806055	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C20860/2015	spike	
KT806045	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C21271/2015	membrane	
KT806045	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C21271/2015	nucleocapsid	
KT806045	257-21492	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C21271/2015	orflab	
KT806045	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Jeddah-KSA-C21271/2015	spike	
KT861627	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Jordan-20140010168/2014	membrane	
KT861627	28537-29778	Middle East respiratory syndrome coronavirus	Hu/Jordan-20140010168/2014	nucleocapsid	
KT861627	257-21492	Middle East respiratory syndrome coronavirus	Hu/Jordan-20140010168/2014	orflab	
KT861627	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Jordan-20140010168/2014	spike	
KT861628	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Jordan-201440011123/2014	membrane	
KT861628	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Jordan-201440011123/2014	nucleocapsid	
KT861628	257-21492	Middle East respiratory syndrome coronavirus	Hu/Jordan-201440011123/2014	orflab	
KT861628	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Jordan-201440011123/2014	spike	
KT806053	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Kharj-KSA-2598/2015	membrane	
KT806053	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Kharj-KSA-2598/2015	nucleocapsid	
KT806053	257-21492	Middle East respiratory syndrome coronavirus	Hu/Kharj-KSA-2598/2015	orflab	
KT806053	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Kharj-KSA-2598/2015	spike	
KT806052	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Kharj-KSA-2599/2015	membrane	
KT806052	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Kharj-KSA-2599/2015	nucleocapsid	
KT806052	257-21492	Middle East respiratory syndrome coronavirus	Hu/Kharj-KSA-2599/2015	orflab	
KT806052	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Kharj-KSA-2599/2015	spike	
KT806048	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Khobar-KSA-6736/2015	membrane	
KT806048	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Khobar-KSA-6736/2015	nucleocapsid	
KT806048	257-21492	Middle East respiratory syndrome coronavirus	Hu/Khobar-KSA-6736/2015	orflab	



2407	KT806048	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Khobar-KSA-6736/2015	spike
2408	KT806054	27717-28376	Middle East respiratory syndrome coronavirus	Hu/Najran-KSA-C20915/2015	membrane
2409	KT806054	28430-29671	Middle East respiratory syndrome coronavirus	Hu/Najran-KSA-C20915/2015	nucleocapsid
2410	KT806054	143-21378	Middle East respiratory syndrome coronavirus	Hu/Najran-KSA-C20915/2015	orflab
2411	KT806054	21320-25381	Middle East respiratory syndrome coronavirus	Hu/Najran-KSA-C20915/2015	spike
2412	KT156560	27853-28512	Middle East respiratory syndrome coronavirus	Hu/Oman_2285_2013	membrane
2413	KT156560	28566-29807	Middle East respiratory syndrome coronavirus	Hu/Oman_2285_2013	nucleocapsid
2414	KT156560	279-21514	Middle East respiratory syndrome coronavirus	Hu/Oman_2285_2013	orflab
2415	KT156560	21456-25517	Middle East respiratory syndrome coronavirus	Hu/Oman_2285_2013	spike
2416	KT156561	27853-28512	Middle East respiratory syndrome coronavirus	Hu/Oman_2874_2013	membrane
2417	KT156561	28566-29807	Middle East respiratory syndrome coronavirus	Hu/Oman_2874_2013	nucleocapsid
2418	KT156561	279-21514	Middle East respiratory syndrome coronavirus	Hu/Oman_2874_2013	orflab
2419	KT156561	21456-25517	Middle East respiratory syndrome coronavirus	Hu/Oman_2874_2013	spike
2420	KU851863	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16077/2015	membrane
2421	KU851863	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16077/2015	nucleocapsid
2422	KU851863	257-21492	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16077/2015	orflab
2423	KU851863	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16077/2015	spike
2424	KU851864	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16098/2015	membrane
2425	KU851864	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16098/2015	nucleocapsid
2426	KU851864	257-21492	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16098/2015	orflab
2427	KU851864	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16098/2015	spike
2428	KU851862	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16117/2015	membrane
2429	KU851862	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16117/2015	nucleocapsid
2430	KU851862	257-21492	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16117/2015	orflab
2431	KU851862	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16117/2015	spike
2432	KU851861	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16120/2015	membrane
2433	KU851861	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16120/2015	nucleocapsid
2434	KU851861	257-21492	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16120/2015	orflab
2435	KU851861	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16120/2015	spike
2436	KU851860	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16121/2015	membrane
2437	KU851860	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16121/2015	nucleocapsid
2438	KU851860	257-21492	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16121/2015	orflab
2439	KU851860	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-16121/2015	spike
2440	KR011263	NA	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2345/2015	membrane
2441	KR011263	NA	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2345/2015	nucleocapsid
2442	KR011263	NA	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2345/2015	orflab
2443	KR011263	NA	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2345/2015	spike
2444	KR011265	NA	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2466/2015	membrane
2445	KR011265	NA	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2466/2015	nucleocapsid
2446	KR011265	NA	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2466/2015	orflab
2447	KR011265	NA	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2466/2015	spike
2448	KT806051	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2716/2015	membrane
2449	KT806051	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2716/2015	nucleocapsid
2450	KT806051	257-21492	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2716/2015	orflab
2451	KT806051	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-2716/2015	spike
2452	KT806049	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-3181/2015	membrane
2453	KT806049	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-3181/2015	nucleocapsid
2454	KT806049	257-21492	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-3181/2015	orflab
2455	KT806049	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Riyadh-KSA-3181/2015	spike
2456	KT026453	27844-28503	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_2959_2015	membrane
2457	KT026453	28557-29798	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_2959_2015	nucleocapsid
2458	KT026453	270-21505	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_2959_2015	orflab
2459	KT026453	21447-25508	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_2959_2015	spike
2460	KT026454	27853-28512	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_4050_2015	membrane
2461	KT026454	28566-29807	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_4050_2015	nucleocapsid
2462	KT026454	279-21514	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_4050_2015	orflab
2463	KT026454	21456-25517	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_4050_2015	spike
2464	KT026456	27850-28509	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_4050_2015	membrane
2465	KT026456	28563-29804	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_4050_2015	nucleocapsid
2466	KT026456	279-21511	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_4050_2015	orflab
2467	KT026456	21453-25514	Middle East respiratory syndrome coronavirus	Hu/Riyadh_KSA_4050_2015	spike
2468	KU710264	27831-28490	Middle East respiratory syndrome coronavirus	Hu/Taif/KSA-7032/2014	membrane
2469	KU710264	28544-29785	Middle East respiratory syndrome coronavirus	Hu/Taif/KSA-7032/2014	nucleocapsid
2470	KU710264	257-21492	Middle East respiratory syndrome coronavirus	Hu/Taif/KSA-7032/2014	orflab
2471	KU710264	21434-25495	Middle East respiratory syndrome coronavirus	Hu/Taif/KSA-7032/2014	spike
2472	KJ813439	27853-28512	Middle East respiratory syndrome coronavirus	Indiana/USA-1_Saudi Arabia_2014	membrane
2473	KJ813439	28566-29807	Middle East respiratory syndrome coronavirus	Indiana/USA-1_Saudi Arabia_2014	nucleocapsid
2474	KJ813439	279-21514	Middle East respiratory syndrome coronavirus	Indiana/USA-1_Saudi Arabia_2014	orflab
2475	KJ813439	21456-25517	Middle East respiratory syndrome coronavirus	Indiana/USA-1_Saudi Arabia_2014	spike
2476	KJ556336	NA	Middle East respiratory syndrome coronavirus	Jeddah_1_2013	membrane
2477	KJ556336	NA	Middle East respiratory syndrome coronavirus	Jeddah_1_2013	nucleocapsid
2478	KJ556336	NA	Middle East respiratory syndrome coronavirus	Jeddah_1_2013	orflab
2479	KJ556336	NA	Middle East respiratory syndrome coronavirus	Jeddah_1_2013	spike
2480	KM027260	NA	Middle East respiratory syndrome coronavirus	Jeddah_C10306/KSA/2014-04-20	membrane
2481	KM027260	NA	Middle East respiratory syndrome coronavirus	Jeddah_C10306/KSA/2014-04-20	nucleocapsid
2482	KM027260	21350-25411	Middle East respiratory syndrome coronavirus	Jeddah_C10306/KSA/2014-04-20	spike
2483	KM027255	NA	Middle East respiratory syndrome coronavirus	Jeddah_C7149/KSA/2014-04-05	membrane
2484	KM027255	NA	Middle East respiratory syndrome coronavirus	Jeddah_C7149/KSA/2014-04-05	nucleocapsid
2485	KM027255	21419-25480	Middle East respiratory syndrome coronavirus	Jeddah_C7149/KSA/2014-04-05	spike
2486	KM027256	NA	Middle East respiratory syndrome coronavirus	Jeddah_C7569/KSA/2014-04-03	membrane
2487	KM027256	NA	Middle East respiratory syndrome coronavirus	Jeddah_C7569/KSA/2014-04-03	nucleocapsid
2488	KM027256	21419-25480	Middle East respiratory syndrome coronavirus	Jeddah_C7569/KSA/2014-04-03	spike
2489	KM027257	NA	Middle East respiratory syndrome coronavirus	Jeddah_C7770/KSA/2014-04-07	membrane
2490	KM027257	NA	Middle East respiratory syndrome coronavirus	Jeddah_C7770/KSA/2014-04-07	nucleocapsid
2491	KM027257	21419-25480	Middle East respiratory syndrome coronavirus	Jeddah_C7770/KSA/2014-04-07	spike
2492	KM027258	NA	Middle East respiratory syndrome coronavirus	Jeddah_C8826/KSA/2014-04-12	membrane
2493	KM027258	NA	Middle East respiratory syndrome coronavirus	Jeddah_C8826/KSA/2014-04-12	nucleocapsid
2494	KM027258	21419-25480	Middle East respiratory syndrome coronavirus	Jeddah_C8826/KSA/2014-04-12	spike
2495	KM027259	NA	Middle East respiratory syndrome coronavirus	Jeddah_C9055/KSA/2014-04-14	membrane
2496	KM027259	NA	Middle East respiratory syndrome coronavirus	Jeddah_C9055/KSA/2014-04-14	nucleocapsid
2497	KM027259	21419-25480	Middle East respiratory syndrome coronavirus	Jeddah_C9055/KSA/2014-04-14	spike
2498	KT121580	NA	Middle East respiratory syndrome coronavirus	KFMC-1	orflab
2499	KT121580	NA	Middle East respiratory syndrome coronavirus	KFMC-1	membrane
2500	KT121580	NA	Middle East respiratory syndrome coronavirus	KFMC-1	nucleocapsid
2501	KT121580	NA	Middle East respiratory syndrome coronavirus	KFMC-1	spike
2502	KT121578	NA	Middle East respiratory syndrome coronavirus	KFMC-10	orflab
2503	KT121578	NA	Middle East respiratory syndrome coronavirus	KFMC-10	membrane
2504	KT121578	NA	Middle East respiratory syndrome coronavirus	KFMC-10	nucleocapsid
2505	KT121578	NA	Middle East respiratory syndrome coronavirus	KFMC-10	spike
2506	KT121577	NA	Middle East respiratory syndrome coronavirus	KFMC-2	orflab
2507	KT121577	NA	Middle East respiratory syndrome coronavirus	KFMC-2	membrane
2508	KT121577	NA	Middle East respiratory syndrome coronavirus	KFMC-2	nucleocapsid
2509	KT121577	NA	Middle East respiratory syndrome coronavirus	KFMC-2	spike
2510	KT121572	NA	Middle East respiratory syndrome coronavirus	KFMC-5	orflab
2511	KT121572	NA	Middle East respiratory syndrome coronavirus	KFMC-5	membrane
2512	KT121572	NA	Middle East respiratory syndrome coronavirus	KFMC-5	nucleocapsid
2513	KT121572	NA	Middle East respiratory syndrome coronavirus	KFMC-5	spike
2514	KT121576	NA	Middle East respiratory syndrome coronavirus	KFMC-6	orflab
2515	KT121576	NA	Middle East respiratory syndrome coronavirus	KFMC-6	membrane
2516	KT121576	NA	Middle East respiratory syndrome coronavirus	KFMC-6	nucleocapsid
2517	KT121576	NA	Middle East respiratory syndrome coronavirus	KFMC-6	spike



620	KX034099	27853-28512	Middle East respiratory syndrome coronavirus	MERS-CoV/KOR/Seoul/169-2015	membrane
621	KX034099	28566-29807	Middle East respiratory syndrome coronavirus	MERS-CoV/KOR/Seoul/169-2015	nucleocapsid
622	KX034099	279-21514	Middle East respiratory syndrome coronavirus	MERS-CoV/KOR/Seoul/169-2015	orf1ab
623	KX034099	21456-25517	Middle East respiratory syndrome coronavirus	MERS-CoV/KOR/Seoul/169-2015	spike
624	KX034100	27853-28512	Middle East respiratory syndrome coronavirus	MERS-CoV/KOR/Seoul/177-3-2015	membrane
625	KX034100	28566-29807	Middle East respiratory syndrome coronavirus	MERS-CoV/KOR/Seoul/177-3-2015	nucleocapsid
626	KX034100	279-21514	Middle East respiratory syndrome coronavirus	MERS-CoV/KOR/Seoul/177-3-2015	orf1ab
627	KX034100	21456-25517	Middle East respiratory syndrome coronavirus	MERS-CoV/KOR/Seoul/177-3-2015	spike
628	KF192507	NA	Middle East respiratory syndrome coronavirus	Munich	membrane
629	KF192507	NA	Middle East respiratory syndrome coronavirus	Munich	nucleocapsid
630	KF192507	NA	Middle East respiratory syndrome coronavirus	Munich	orf1ab
631	KF192507	NA	Middle East respiratory syndrome coronavirus	Munich	spike
632	KJ477102	NA	Middle East respiratory syndrome coronavirus	NRCE-HKU205	membrane
633	KJ477102	NA	Middle East respiratory syndrome coronavirus	NRCE-HKU205	nucleocapsid
634	KJ477102	NA	Middle East respiratory syndrome coronavirus	NRCE-HKU205	orf1ab
635	KJ477102	NA	Middle East respiratory syndrome coronavirus	NRCE-HKU205	spike
636	KJ156934	NA	Middle East respiratory syndrome coronavirus	Riyadh_14_2013	membrane
637	KJ156934	NA	Middle East respiratory syndrome coronavirus	Riyadh_14_2013	nucleocapsid
638	KJ156934	NA	Middle East respiratory syndrome coronavirus	Riyadh_14_2013	orf1ab
639	KJ156934	NA	Middle East respiratory syndrome coronavirus	Riyadh_14_2013	spike
640	KF600612	NA	Middle East respiratory syndrome coronavirus	Riyadh_1_2012	membrane
641	KF600612	NA	Middle East respiratory syndrome coronavirus	Riyadh_1_2012	nucleocapsid
642	KF600612	NA	Middle East respiratory syndrome coronavirus	Riyadh_1_2012	orf1ab
643	KF600612	NA	Middle East respiratory syndrome coronavirus	Riyadh_1_2012	spike
644	KM027262	NA	Middle East respiratory syndrome coronavirus	Riyadh_2014KSA_683/KSA/2014	membrane
645	KM027262	NA	Middle East respiratory syndrome coronavirus	Riyadh_2014KSA_683/KSA/2014	nucleocapsid
646	KM027262	21348-25409	Middle East respiratory syndrome coronavirus	Riyadh_2014KSA_683/KSA/2014	spike
647	KF600652	NA	Middle East respiratory syndrome coronavirus	Riyadh_2_2012	membrane
648	KF600652	NA	Middle East respiratory syndrome coronavirus	Riyadh_2_2012	nucleocapsid
649	KF600652	NA	Middle East respiratory syndrome coronavirus	Riyadh_2_2012	orf1ab
650	KF600652	NA	Middle East respiratory syndrome coronavirus	Riyadh_2_2012	spike
651	KF600613	NA	Middle East respiratory syndrome coronavirus	Riyadh_3_2013	membrane
652	KF600613	NA	Middle East respiratory syndrome coronavirus	Riyadh_3_2013	nucleocapsid
653	KF600613	NA	Middle East respiratory syndrome coronavirus	Riyadh_3_2013	orf1ab
654	KF600613	NA	Middle East respiratory syndrome coronavirus	Riyadh_3_2013	spike
655	KJ156952	NA	Middle East respiratory syndrome coronavirus	Riyadh_4_2013	membrane
656	KJ156952	NA	Middle East respiratory syndrome coronavirus	Riyadh_4_2013	nucleocapsid
657	KJ156952	NA	Middle East respiratory syndrome coronavirus	Riyadh_4_2013	orf1ab
658	KJ156952	NA	Middle East respiratory syndrome coronavirus	Riyadh_4_2013	spike
659	KJ156944	NA	Middle East respiratory syndrome coronavirus	Riyadh_5_2013	membrane
660	KJ156944	NA	Middle East respiratory syndrome coronavirus	Riyadh_5_2013	nucleocapsid
661	KJ156944	NA	Middle East respiratory syndrome coronavirus	Riyadh_5_2013	orf1ab
662	KJ156944	NA	Middle East respiratory syndrome coronavirus	Riyadh_5_2013	spike
663	KJ156869	NA	Middle East respiratory syndrome coronavirus	Riyadh_9_2013	membrane
664	KJ156869	NA	Middle East respiratory syndrome coronavirus	Riyadh_9_2013	nucleocapsid
665	KJ156869	NA	Middle East respiratory syndrome coronavirus	Riyadh_9_2013	orf1ab
666	KJ156869	NA	Middle East respiratory syndrome coronavirus	Riyadh_9_2013	spike
667	KJ156949	NA	Middle East respiratory syndrome coronavirus	Taif_1_2013	membrane
668	KJ156949	NA	Middle East respiratory syndrome coronavirus	Taif_1_2013	nucleocapsid
669	KJ156949	NA	Middle East respiratory syndrome coronavirus	Taif_1_2013	orf1ab
670	KJ156949	NA	Middle East respiratory syndrome coronavirus	Taif_1_2013	spike
671	KJ156881	NA	Middle East respiratory syndrome coronavirus	Wadi-Ad-Dawasir_1_2013	membrane
672	KJ156881	NA	Middle East respiratory syndrome coronavirus	Wadi-Ad-Dawasir_1_2013	nucleocapsid
673	KJ156881	NA	Middle East respiratory syndrome coronavirus	Wadi-Ad-Dawasir_1_2013	orf1ab
674	KJ156881	NA	Middle East respiratory syndrome coronavirus	Wadi-Ad-Dawasir_1_2013	spike
675	JX169866	28379-29065	Murine coronavirus	JHM-WU-Dns2	membrane
676	JX169866	29080-30447	Murine coronavirus	JHM-WU-Dns2	nucleocapsid
677	JX169866	190-21731	Murine coronavirus	JHM-WU-Dns2	orf1ab
678	JX169866	23600-27307	Murine coronavirus	JHM-WU-Dns2	spike
679	JX169867	28701-29387	Murine coronavirus	JHM.WU	membrane
680	JX169867	29402-30769	Murine coronavirus	JHM.WU	nucleocapsid
681	JX169867	194-21738	Murine coronavirus	JHM.WU	orf1ab
682	JX169867	23922-27629	Murine coronavirus	JHM.WU	spike
683	KF268337	28947-29633	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_17C11/2012	membrane
684	KF268337	29648-31012	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_17C11/2012	nucleocapsid
685	KF268337	189-21724	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_17C11/2012	orf1ab
686	KF268337	23908-27882	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_17C11/2012	spike
687	KF268338	28947-29633	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_L94P/2012	membrane
688	KF268338	29648-31012	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_L94P/2012	nucleocapsid
689	KF268338	189-21724	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_L94P/2012	orf1ab
690	KF268338	23908-27882	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_L94P/2012	spike
691	KF268339	28943-29629	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_ns2M/2012	membrane
692	KF268339	29644-31008	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_ns2M/2012	nucleocapsid
693	KF268339	185-21720	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_ns2M/2012	orf1ab
694	KF268339	23904-27878	Murine coronavirus	MHV/BHKKR_lab/USA/icA59_ns2M/2012	spike
695	KF268336	28947-29633	Murine coronavirus	MHV/BHKKR_lab/USA/inFA59_H126A/2012	membrane
696	KF268336	29648-31012	Murine coronavirus	MHV/BHKKR_lab/USA/inFA59_H126A/2012	nucleocapsid
697	KF268336	189-21724	Murine coronavirus	MHV/BHKKR_lab/USA/inFA59_H126A/2012	orf1ab
698	KF268336	23908-27882	Murine coronavirus	MHV/BHKKR_lab/USA/inFA59_H126A/2012	spike
699	FJ647225	NA	Murine coronavirus inf-MHV-A59	inf-MHV-A59	membrane
700	FJ647225	NA	Murine coronavirus inf-MHV-A59	inf-MHV-A59	nucleocapsid
701	FJ647225	NA	Murine coronavirus inf-MHV-A59	inf-MHV-A59	spike
702	FJ647223	NA	Murine coronavirus MHV-1	MHV-1	membrane
703	FJ647223	NA	Murine coronavirus MHV-1	MHV-1	nucleocapsid
704	FJ647223	NA	Murine coronavirus MHV-1	MHV-1	spike
705	FJ647224	NA	Murine coronavirus MHV-3	MHV-3	membrane
706	FJ647224	NA	Murine coronavirus MHV-3	MHV-3	nucleocapsid
707	FJ647224	NA	Murine coronavirus MHV-3	MHV-3	spike
708	FJ647226	NA	Murine coronavirus MHV-JHM.IA	MHV-JHM.IA	membrane
709	FJ647226	NA	Murine coronavirus MHV-JHM.IA	MHV-JHM.IA	nucleocapsid
710	FJ647226	NA	Murine coronavirus MHV-JHM.IA	MHV-JHM.IA	spike
711	FJ647218	NA	Murine coronavirus RA59/R13	RA59/R13	membrane
712	FJ647218	NA	Murine coronavirus RA59/R13	RA59/R13	nucleocapsid
713	FJ647218	NA	Murine coronavirus RA59/R13	RA59/R13	spike
714	FJ647220	NA	Murine coronavirus RA59/SJHM	RA59/SJHM	membrane
715	FJ647220	NA	Murine coronavirus RA59/SJHM	RA59/SJHM	nucleocapsid
716	FJ647220	NA	Murine coronavirus RA59/SJHM	RA59/SJHM	spike
717	FJ647221	NA	Murine coronavirus repA59/RJHM	repA59/RJHM	membrane
718	FJ647221	NA	Murine coronavirus repA59/RJHM	repA59/RJHM	nucleocapsid
719	FJ647221	NA	Murine coronavirus repA59/RJHM	repA59/RJHM	spike
720	FJ647227	NA	Murine coronavirus repJHM/RA59	repJHM/RA59	membrane
721	FJ647227	NA	Murine coronavirus repJHM/RA59	repJHM/RA59	nucleocapsid
722	FJ647227	NA	Murine coronavirus repJHM/RA59	repJHM/RA59	spike
723	FJ647219	NA	Murine coronavirus RJHM/A	RJHM/A	membrane
724	FJ647219	NA	Murine coronavirus RJHM/A	RJHM/A	nucleocapsid
725	FJ647219	NA	Murine coronavirus RJHM/A	RJHM/A	spike
726	FJ647222	NA	Murine coronavirus SA59/RJHM	SA59/RJHM	membrane
727	FJ647222	NA	Murine coronavirus SA59/RJHM	SA59/RJHM	nucleocapsid
728	FJ647222	NA	Murine coronavirus SA59/RJHM	SA59/RJHM	spike
729	MF618252	NA	Murine hepatitis virus A59	orf1ab	
730	MF618252	NA	Murine hepatitis virus A59	membrane	

740	MF618252	NA	Murine hepatitis virus	A59	nucleocapsid		
741	MF618252	NA	Murine hepatitis virus	A59	spike		
742	MF618253	NA	Murine hepatitis virus	A59	orf1ab		
743	MF618253	NA	Murine hepatitis virus	A59	membrane		
744	MF618253	NA	Murine hepatitis virus	A59	nucleocapsid		
745	MF618253	NA	Murine hepatitis virus	A59	spike		
746	FJ884686	NA	Murine hepatitis virus strain A59	A59	membrane		
747	FJ884686	NA	Murine hepatitis virus strain A59	A59	nucleocapsid		
748	FJ884686	NA	Murine hepatitis virus strain A59	A59	spike		
749	FJ884687	NA	Murine hepatitis virus strain A59	A59	membrane		
750	FJ884687	NA	Murine hepatitis virus strain A59	A59	nucleocapsid		
751	FJ884687	NA	Murine hepatitis virus strain A59	A59	spike		
752	AC_000192	29142-29828	Murine hepatitis virus strain JHM	UNKNOWN-AC_000192	membrane		
753	AC_000192	29843-31210	Murine hepatitis virus strain JHM	UNKNOWN-AC_000192	nucleocapsid		
754	AC_000192	215-21756	Murine hepatitis virus strain JHM	UNKNOWN-AC_000192	orf1ab		
755	AC_000192	23940-28070	Murine hepatitis virus strain JHM	UNKNOWN-AC_000192	spike		
756	JQ173883	NA	Murine hepatitis virus strain S/3239-17	MHV/S/3239-17	orf1ab		
757	JQ173883	NA	Murine hepatitis virus strain S/3239-17	MHV/S/3239-17	membrane		
758	JQ173883	NA	Murine hepatitis virus strain S/3239-17	MHV/S/3239-17	nucleocapsid		
759	JQ173883	NA	Murine hepatitis virus strain S/3239-17	MHV/S/3239-17	spike		
760	JF792616	NA	Rat coronavirus 681		orf1ab		
761	JF792616	NA	Rat coronavirus 681		membrane		
762	JF792616	NA	Rat coronavirus 681		nucleocapsid		
763	JF792616	NA	Rat coronavirus 681		spike		
764	JF792617	NA	Rat coronavirus 8190		orf1ab		
765	JF792617	NA	Rat coronavirus 8190		membrane		
766	JF792617	NA	Rat coronavirus 8190		nucleocapsid		
767	JF792617	NA	Rat coronavirus 8190		spike		
768	NC_012936	28902-29588	Rat coronavirus Parker	Parker	membrane		
769	NC_012936	29603-30967	Rat coronavirus Parker	Parker	nucleocapsid		
770	NC_012936	183-21700	Rat coronavirus Parker	Parker	orf1ab		
771	NC_012936	23891-27973	Rat coronavirus Parker	Parker	spike		
772	AF208067	28906-29592	Murine hepatitis virus	ML-10	membrane		
773	AF208067	29607-30971	Murine hepatitis virus	ML-10	nucleocapsid		
774	AF208067	23867-27841	Murine hepatitis virus	ML-10	spike		
775	AF208066	28742-29428	Murine hepatitis virus	Penn 97-1	membrane		
776	AF208066	29443-30798	Murine hepatitis virus	Penn 97-1	nucleocapsid		
777	AF208066	23712-27677	Murine hepatitis virus	Penn 97-1	spike		
778	AF201929	NA	Murine hepatitis virus strain 2	MHV-2	membrane		
779	AF201929	NA	Murine hepatitis virus strain 2	MHV-2	nucleocapsid		
780	AF201929	NA	Murine hepatitis virus strain 2	MHV-2	spike		
781	AF207902	28906-29592	Murine hepatitis virus strain ML-11	ML-11	membrane		
782	AF207902	29607-30962	Murine hepatitis virus strain ML-11	ML-11	nucleocapsid		
783	AF207902	23756-27841	Murine hepatitis virus strain ML-11	ML-11	spike		
784	KJ473820	NA	BtPa-BetaCoV/GD2013	BtPa-GD2013	orf1ab		
785	KJ473820	NA	BtPa-BetaCoV/GD2013	BtPa-GD2013	membrane		
786	KJ473820	NA	BtPa-BetaCoV/GD2013	BtPa-GD2013	nucleocapsid		
787	KJ473820	NA	BtPa-BetaCoV/GD2013	BtPa-GD2013	spike		
788	NC_009020	28166-28828	Pipistrellus bat coronavirus HKU5	HKU5-1 LMH03f	membrane		
789	NC_009020	28878-30161	Pipistrellus bat coronavirus HKU5	HKU5-1 LMH03f	nucleocapsid		
790	NC_009020	261-21808	Pipistrellus bat coronavirus HKU5	HKU5-1 LMH03f	orf1ab		
791	NC_009020	21735-25793	Pipistrellus bat coronavirus HKU5	HKU5-1 LMH03f	spike		
792	NC_017083	28760-29452	Rabbit coronavirus HKU14	HKU14-1	membrane		
793	NC_017083	29462-30796	Rabbit coronavirus HKU14	HKU14-1	nucleocapsid		
794	NC_017083	209-21663	Rabbit coronavirus HKU14	HKU14-1	orf1ab		
795	NC_017083	23793-27881	Rabbit coronavirus HKU14	HKU14-1	spike		
796	JN874562	28567-29259	Rabbit coronavirus HKU14	HKU14-10	membrane		
797	JN874562	29269-30600	Rabbit coronavirus HKU14	HKU14-10	nucleocapsid		
798	JN874562	209-21546	Rabbit coronavirus HKU14	HKU14-10	orf1ab		
799	JN874562	23593-27684	Rabbit coronavirus HKU14	HKU14-10	spike		
800	JN874560	28776-29468	Rabbit coronavirus HKU14	HKU14-3	membrane		
801	JN874560	29478-30812	Rabbit coronavirus HKU14	HKU14-3	nucleocapsid		
802	JN874560	NA	Rabbit coronavirus HKU14	HKU14-3	orf1ab		
803	JN874560	23802-27893	Rabbit coronavirus HKU14	HKU14-3	spike		
804	JN874561	28757-29449	Rabbit coronavirus HKU14	HKU14-8	membrane		
805	JN874561	29459-30793	Rabbit coronavirus HKU14	HKU14-8	nucleocapsid		
806	JN874561	NA	Rabbit coronavirus HKU14	HKU14-8	orf1ab		
807	JN874561	23789-27880	Rabbit coronavirus HKU14	HKU14-8	spike		
808	HM211100	25693-26355	Bat coronavirus HKU9-10-1	UNKNOWN-HM211100	membrane		
809	HM211100	26418-27824	Bat coronavirus HKU9-10-1	UNKNOWN-HM211100	nucleocapsid		
810	HM211100	229-20999	Bat coronavirus HKU9-10-1	UNKNOWN-HM211100	orf1ab		
811	HM211100	20959-24768	Bat coronavirus HKU9-10-1	UNKNOWN-HM211100	spike		
812	HM211101	25665-26327	Bat coronavirus HKU9-10-2	UNKNOWN-HM211101	membrane		
813	HM211101	26390-27799	Bat coronavirus HKU9-10-2	UNKNOWN-HM211101	nucleocapsid		
814	HM211101	228-20938	Bat coronavirus HKU9-10-2	UNKNOWN-HM211101	orf1ab		
815	HM211101	20898-24740	Bat coronavirus HKU9-10-2	UNKNOWN-HM211101	spike		
816	HM211098	25693-26355	Bat coronavirus HKU9-5-1	UNKNOWN-HM211098	membrane		
817	HM211098	26418-27824	Bat coronavirus HKU9-5-1	UNKNOWN-HM211098	nucleocapsid		
818	HM211098	229-20999	Bat coronavirus HKU9-5-1	UNKNOWN-HM211098	orf1ab		
819	HM211098	20959-24768	Bat coronavirus HKU9-5-1	UNKNOWN-HM211098	spike		
820	HM211099	25665-26324	Bat coronavirus HKU9-5-2	UNKNOWN-HM211099	membrane		
821	HM211099	26387-27796	Bat coronavirus HKU9-5-2	UNKNOWN-HM211099	nucleocapsid		
822	HM211099	228-20938	Bat coronavirus HKU9-5-2	UNKNOWN-HM211099	orf1ab		
823	HM211099	20898-24740	Bat coronavirus HKU9-5-2	UNKNOWN-HM211099	spike		
824	NC_009021	25689-26357	Rousettus bat coronavirus HKU9	HKU9-1 BF_0051	membrane		
825	NC_009021	26419-27825	Rousettus bat coronavirus HKU9	HKU9-1 BF_0051	nucleocapsid		
826	NC_009021	229-21020	Rousettus bat coronavirus HKU9	HKU9-1 BF_0051	orf1ab		
827	NC_009021	20974-24798	Rousettus bat coronavirus HKU9	HKU9-1 BF_0051	spike		
828	MG762674	NA	Rousettus bat coronavirus HKU9	Rousettus spp/Jinghong/2009	membrane		
829	MG762674	NA	Rousettus bat coronavirus HKU9	Rousettus spp/Jinghong/2009	nucleocapsid		
830	MG762674	NA	Rousettus bat coronavirus HKU9	Rousettus spp/Jinghong/2009	orf1ab		
831	MG762674	NA	Rousettus bat coronavirus HKU9	Rousettus spp/Jinghong/2009	spike		
832	KF294457	NA	SARS-related bat coronavirus	Longquan-140	membrane		
833	KF294457	NA	SARS-related bat coronavirus	Longquan-140	nucleocapsid		
834	KF294457	NA	SARS-related bat coronavirus	Longquan-140	orf1ab		
835	KF294457	NA	SARS-related bat coronavirus	Longquan-140	spike		
836	DQ022305	26339-27004	Bat SARS coronavirus HKU3-1	HKU3-1	membrane		
837	DQ022305	28100-29365	Bat SARS coronavirus HKU3-1	HKU3-1	nucleocapsid		
838	DQ022305	262-21464	Bat SARS coronavirus HKU3-1	HKU3-1	orf1ab		
839	DQ022305	21471-25199	Bat SARS coronavirus HKU3-1	HKU3-1	spike		
840	DQ412042	NA	Bat SARS CoV Rf1/2004 Rf1		membrane		
841	DQ412042	NA	Bat SARS CoV Rf1/2004 Rf1		nucleocapsid		
842	DQ412042	NA	Bat SARS CoV Rf1/2004 Rf1		spike		
843	DQ412043	NA	Bat SARS CoV Rm1/2004	Rm1	membrane		
844	DQ412043	NA	Bat SARS CoV Rm1/2004	Rm1	nucleocapsid		
845	DQ412043	NA	Bat SARS CoV Rm1/2004	Rm1	spike		
846	DQ071615	NA	Bat SARS CoV Rp3/2004Rp3		membrane		
847	DQ071615	28112-29377	Bat SARS CoV Rp3/2004Rp3		nucleocapsid		
848	DQ071615	NA	Bat SARS CoV Rp3/2004Rp3		spike		
849	AY291315	26398-27063	SARS coronavirus Frankfurt 1	Frankfurt 1	membrane		
850	AY291315	28120-29388	SARS coronavirus Frankfurt 1	Frankfurt 1	nucleocapsid		

1	AY291315	NA	SARS coronavirus Frankfurt 1	Frankfurt 1	orf1ab		
2	AY291315	21492-25259	SARS coronavirus Frankfurt 1	Frankfurt 1	spike		
3	KP886808	26352-27017	Bat SARS-like coronavirus YNLF_31C	YNLF_31C	membrane		
4	KP886808	28103-29368	Bat SARS-like coronavirus YNLF_31C	YNLF_31C	nucleocapsid		
5	KP886808	264-21484	Bat SARS-like coronavirus YNLF_31C	YNLF_31C	orf1ab		
6	KP886808	21491-25216	Bat SARS-like coronavirus YNLF_31C	YNLF_31C	spike		
7	KP886809	26352-27017	Bat SARS-like coronavirus YNLF_34C	YNLF_34C	membrane		
8	KP886809	28103-29368	Bat SARS-like coronavirus YNLF_34C	YNLF_34C	nucleocapsid		
9	KP886809	264-21484	Bat SARS-like coronavirus YNLF_34C	YNLF_34C	orf1ab		
10	KP886809	21491-25216	Bat SARS-like coronavirus YNLF_34C	YNLF_34C	spike		
11	KF569996	NA	Rhinolophus affinis coronavirus	LYRa11	membrane		
12	KF569996	NA	Rhinolophus affinis coronavirus	LYRa11	nucleocapsid		
13	KF569996	NA	Rhinolophus affinis coronavirus	LYRa11	spike		
14	JX163924	26358-27023	SARS coronavirus	Tor2/FP1-10851	membrane		
15	JX163924	28080-29348	SARS coronavirus	Tor2/FP1-10851	nucleocapsid		
16	JX163924	225-21445	SARS coronavirus	Tor2/FP1-10851	orf1ab		
17	JX163924	21452-25219	SARS coronavirus	Tor2/FP1-10851	spike		
18	JX163927	26358-27023	SARS coronavirus	Tor2/FP1-10851	membrane		
19	JX163927	28080-29348	SARS coronavirus	Tor2/FP1-10851	nucleocapsid		
20	JX163927	225-21445	SARS coronavirus	Tor2/FP1-10851	orf1ab		
21	JX163927	21452-25219	SARS coronavirus	Tor2/FP1-10851	spike		
22	JX163925	26358-27023	SARS coronavirus	Tor2/FP1-10895	membrane		
23	JX163925	28080-29348	SARS coronavirus	Tor2/FP1-10895	nucleocapsid		
24	JX163925	225-21445	SARS coronavirus	Tor2/FP1-10895	orf1ab		
25	JX163925	21452-25219	SARS coronavirus	Tor2/FP1-10895	spike		
26	JX163928	26358-27023	SARS coronavirus	Tor2/FP1-10895	membrane		
27	JX163928	28080-29348	SARS coronavirus	Tor2/FP1-10895	nucleocapsid		
28	JX163928	225-21445	SARS coronavirus	Tor2/FP1-10895	orf1ab		
29	JX163928	21452-25219	SARS coronavirus	Tor2/FP1-10895	spike		
30	JX163923	26358-27023	SARS coronavirus	Tor2/FP1-10912	membrane		
31	JX163923	28080-29348	SARS coronavirus	Tor2/FP1-10912	nucleocapsid		
32	JX163923	225-21445	SARS coronavirus	Tor2/FP1-10912	orf1ab		
33	JX163923	21452-25219	SARS coronavirus	Tor2/FP1-10912	spike		
34	JX163926	26358-27023	SARS coronavirus	Tor2/FP1-10912	membrane		
35	JX163926	28080-29348	SARS coronavirus	Tor2/FP1-10912	nucleocapsid		
36	JX163926	225-21445	SARS coronavirus	Tor2/FP1-10912	orf1ab		
37	JX163926	21452-25219	SARS coronavirus	Tor2/FP1-10912	spike		
38	JF292922	NA	SARS coronavirus ExoN1	ExoN1 mutant	membrane		
39	JF292922	NA	SARS coronavirus ExoN1	ExoN1 mutant	nucleocapsid		
40	JF292922	NA	SARS coronavirus ExoN1	ExoN1 mutant	orf1ab		
41	JF292922	NA	SARS coronavirus ExoN1	ExoN1 mutant	spike		
42	JX162087	26378-27043	SARS coronavirus ExoN1	ExoN1 mutant	membrane		
43	JX162087	28100-29368	SARS coronavirus ExoN1	ExoN1 mutant	nucleocapsid		
44	JX162087	245-21465	SARS coronavirus ExoN1	ExoN1 mutant	orf1ab		
45	JX162087	21472-25239	SARS coronavirus ExoN1	ExoN1 mutant	spike		
46	KF514407	26378-27043	SARS coronavirus ExoN1	SARS/VeroE6_lab/USA/ExoN1_c5.7P20/2010	membrane		
47	KF514407	28100-29368	SARS coronavirus ExoN1	SARS/VeroE6_lab/USA/ExoN1_c5.7P20/2010	nucleocapsid		
48	KF514407	245-21465	SARS coronavirus ExoN1	SARS/VeroE6_lab/USA/ExoN1_c5.7P20/2010	orf1ab		
49	KF514407	21472-25239	SARS coronavirus ExoN1	SARS/VeroE6_lab/USA/ExoN1_c5.7P20/2010	spike		
50	KF514389	26378-27043	SARS coronavirus ExoN1	SARS/VeroE6_lab/USA/ExoN1_c8P10/2009	membrane		
51	KF514389	28100-29368	SARS coronavirus ExoN1	SARS/VeroE6_lab/USA/ExoN1_c8P10/2009	nucleocapsid		
52	KF514389	245-21465	SARS coronavirus ExoN1	SARS/VeroE6_lab/USA/ExoN1_c8P10/2009	orf1ab		
53	KF514389	21472-25239	SARS coronavirus ExoN1	SARS/VeroE6_lab/USA/ExoN1_c8P10/2009	spike		
54	JQ316196	NA	SARS coronavirus HKU-39849	HKU-39849	membrane		
55	JQ316196	NA	SARS coronavirus HKU-39849	HKU-39849	nucleocapsid		
56	JQ316196	NA	SARS coronavirus HKU-39849	HKU-39849	orf1ab		
57	JQ316196	NA	SARS coronavirus HKU-39849	HKU-39849	spike		
58	JN854286	NA	SARS coronavirus HKU-39849	recSARS-CoV HKU-39849	membrane		
59	JN854286	NA	SARS coronavirus HKU-39849	recSARS-CoV HKU-39849	nucleocapsid		
60	JN854286	NA	SARS coronavirus HKU-39849	recSARS-CoV HKU-39849	orf1ab		
61	JN854286	NA	SARS coronavirus HKU-39849	recSARS-CoV HKU-39849	spike		
62	HQ890543	NA	SARS coronavirus MA15 MA15	membrane			
63	HQ890543	NA	SARS coronavirus MA15 MA15	nucleocapsid			
64	HQ890543	NA	SARS coronavirus MA15 MA15	orf1ab			
65	HQ890543	NA	SARS coronavirus MA15 MA15	spike			
66	JF292909	NA	SARS coronavirus MA15 MA15	membrane			
67	JF292909	NA	SARS coronavirus MA15 MA15	nucleocapsid			
68	JF292909	NA	SARS coronavirus MA15 MA15	orf1ab			
69	JF292909	NA	SARS coronavirus MA15 MA15	spike			
70	JF292915	NA	SARS coronavirus MA15 MA15	membrane			
71	JF292915	NA	SARS coronavirus MA15 MA15	nucleocapsid			
72	JF292915	NA	SARS coronavirus MA15 MA15	orf1ab			
73	JF292915	NA	SARS coronavirus MA15 MA15	spike			
74	HQ890532	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	membrane		
75	HQ890532	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	nucleocapsid		
76	HQ890532	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	orf1ab		
77	HQ890532	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	spike		
78	HQ890534	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	membrane		
79	HQ890534	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	nucleocapsid		
80	HQ890534	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	orf1ab		
81	HQ890534	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	spike		
82	HQ890535	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	membrane		
83	HQ890535	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	nucleocapsid		
84	HQ890535	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	orf1ab		
85	HQ890535	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	spike		
86	HQ890537	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	membrane		
87	HQ890537	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	nucleocapsid		
88	HQ890537	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	orf1ab		
89	HQ890537	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	spike		
90	HQ890538	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	membrane		
91	HQ890538	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	nucleocapsid		
92	HQ890538	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	orf1ab		
93	HQ890538	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	spike		
94	JF292903	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	membrane		
95	JF292903	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	nucleocapsid		
96	JF292903	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	orf1ab		
97	JF292903	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	spike		
98	JF292904	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	membrane		
99	JF292904	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	nucleocapsid		
100	JF292904	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	orf1ab		
101	JF292904	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	spike		
102	JF292905	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	membrane		
103	JF292905	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	nucleocapsid		
104	JF292905	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	orf1ab		
105	JF292905	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	spike		
106	JF292906	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	membrane		
107	JF292906	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	nucleocapsid		
108	JF292906	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	orf1ab		
109	JF292906	NA	SARS coronavirus MA15 ExoN1	MA15 ExoN1 mutant	spike		
110	MK062179	NA	SARS coronavirus UrbaniUrbani	orf1ab			
111	MK062179	NA	SARS coronavirus UrbaniUrbani	membrane			

9062	MK062179	NA	SARS coronavirus UrbaniUrbani	nucleocapsid		
9063	MK062179	NA	SARS coronavirus UrbaniUrbani	spike		
9064	MK062180	NA	SARS coronavirus UrbaniUrbani	orf1ab		
9065	MK062180	NA	SARS coronavirus UrbaniUrbani	membrane		
9066	MK062180	NA	SARS coronavirus UrbaniUrbani	nucleocapsid		
9067	MK062180	NA	SARS coronavirus UrbaniUrbani	spike		
9068	MK062181	NA	SARS coronavirus UrbaniUrbani	orf1ab		
9069	MK062181	NA	SARS coronavirus UrbaniUrbani	membrane		
9070	MK062181	NA	SARS coronavirus UrbaniUrbani	nucleocapsid		
9071	MK062181	NA	SARS coronavirus UrbaniUrbani	spike		
9072	MK062182	NA	SARS coronavirus UrbaniUrbani	orf1ab		
9073	MK062182	NA	SARS coronavirus UrbaniUrbani	membrane		
9074	MK062182	NA	SARS coronavirus UrbaniUrbani	nucleocapsid		
9075	MK062182	NA	SARS coronavirus UrbaniUrbani	spike		
9076	MK062183	NA	SARS coronavirus UrbaniUrbani	orf1ab		
9077	MK062183	NA	SARS coronavirus UrbaniUrbani	membrane		
9078	MK062183	NA	SARS coronavirus UrbaniUrbani	nucleocapsid		
9079	MK062183	NA	SARS coronavirus UrbaniUrbani	spike		
9080	MK062184	NA	SARS coronavirus UrbaniUrbani	orf1ab		
9081	MK062184	NA	SARS coronavirus UrbaniUrbani	membrane		
9082	MK062184	NA	SARS coronavirus UrbaniUrbani	nucleocapsid		
9083	MK062184	NA	SARS coronavirus UrbaniUrbani	spike		
9084	KF514419	26378-27043	SARS coronavirus wtic-MB	SARS/VeroE6_lab/USA/WTic_c1P10/2009	membrane	
9085	KF514419	28100-29368	SARS coronavirus wtic-MB	SARS/VeroE6_lab/USA/WTic_c1P10/2009	nucleocapsid	
9086	KF514419	245-21465	SARS coronavirus wtic-MB	SARS/VeroE6_lab/USA/WTic_c1P10/2009	orf1ab	
9087	KF514419	21472-25239	SARS coronavirus wtic-MB	SARS/VeroE6_lab/USA/WTic_c1P10/2009	spike	
9088	JF292921	NA	SARS coronavirus wtic-MB	WTic	membrane	
9089	JF292921	NA	SARS coronavirus wtic-MB	WTic	nucleocapsid	
9090	JF292921	NA	SARS coronavirus wtic-MB	WTic	orf1ab	
9091	JF292921	NA	SARS coronavirus wtic-MB	WTic	spike	
9092	KY352407	26308-26973	Severe acute respiratory syndrome-related coronavirus	BtKY72	membrane	
9093	KY352407	27665-28924	Severe acute respiratory syndrome-related coronavirus	BtKY72	nucleocapsid	
9094	KY352407	260-21411	Severe acute respiratory syndrome-related coronavirus	BtKY72	orf1ab	
9095	KY352407	21418-25191	Severe acute respiratory syndrome-related coronavirus	BtKY72	spike	
9096	KJ473822	NA	BtTp-BetaCoV/GX2012	BtTp-GX2012	orf1ab	
9097	KJ473822	NA	BtTp-BetaCoV/GX2012	BtTp-GX2012	membrane	
9098	KJ473822	NA	BtTp-BetaCoV/GX2012	BtTp-GX2012	nucleocapsid	
9099	KJ473822	NA	BtTp-BetaCoV/GX2012	BtTp-GX2012	spike	
9100	NC_009019	28000-28659	Tylosycteris bat coronavirus HKU4	HKU4-1 B04f	membrane	
9101	NC_009019	28697-29968	Tylosycteris bat coronavirus HKU4	HKU4-1 B04f	nucleocapsid	
9102	NC_009019	267-21625	Tylosycteris bat coronavirus HKU4	HKU4-1 B04f	orf1ab	
9103	NC_009019	21570-25628	Tylosycteris bat coronavirus HKU4	HKU4-1 B04f	spike	
9104	JX993988	NA	Bat coronavirus Cp/Yunnan2011	Cp/Yunnan2011	orf1ab	
9105	JX993987	NA	Bat coronavirus Rp/Shaanxi2011	Rp/Shaanxi2011	orf1ab	
9106	KU886219	NA	Bovine coronavirus	BCV-AKS-01	orf1ab	
9107	EF424619	195-13346	Bovine coronavirus E-AH187	E-AH187	orf1ab	
9108	EF424615	211-13362	Bovine coronavirus E-AH65	E-AH65	orf1ab	
9109	EF424616	195-13346	Bovine coronavirus E-AH65-TC	E-AH65-TC	orf1ab	
9110	EF424620	195-13346	Bovine coronavirus R-AH187	R-AH187	orf1ab	
9111	EF424617	195-13346	Bovine coronavirus R-AH65	R-AH65	orf1ab	
9112	EF424618	195-13346	Bovine coronavirus R-AH65-TC	R-AH65-TC	orf1ab	
9113	EF424624	195-13346	Calif-giraffe coronavirus US/OH3/2006	US/OH3/2006	orf1ab	
9114	EF424622	195-13346	Giraffe coronavirus US/OH3-TC/2006	US/OH3-TC/2006	orf1ab	
9115	EF424623	195-13346	Giraffe coronavirus US/OH3/2003	US/OH3/2003	orf1ab	
9116	EF424621	196-13347	Sable antelope coronavirus US/OH1/2003	US/OH1/2003	orf1ab	
9117	FJ425188	NA	Sambar deer coronavirus US/OH-WD388-TC/1994	UNKNOWN-FJ425188	orf1ab	
9118	FJ425190	NA	Sambar deer coronavirus US/OH-WD388-TC/1994	UNKNOWN-FJ425190	orf1ab	
9119	FJ425189	NA	Sambar deer coronavirus US/OH-WD388/1994	UNKNOWN-FJ425189	orf1ab	
9120	FJ425185	NA	Waterbuck coronavirus US/OH-WD358-GnC/1994	UNKNOWN-FJ425185	orf1ab	
9121	FJ425184	NA	Waterbuck coronavirus US/OH-WD358-TC/1994	UNKNOWN-FJ425184	orf1ab	
9122	FJ425186	NA	Waterbuck coronavirus US/OH-WD358/1994	UNKNOWN-FJ425186	orf1ab	
9123	FJ425187	NA	White-tailed deer coronavirus US/OH-WD470/1994	UNKNOWN-FJ425187	orf1ab	
9124	MH810163	NA	Yak coronavirus YAK/HY24/CH/2017	orf1ab		
9125	AF220295	NA	Bovine coronavirus	Quebec	orf1ab	
9126	KJ361500	NA	Middle East respiratory syndrome coronavirus	Hu-France (UAE) - FRA1_1627-2013_BAL_Sanger	orf1ab	
9127	KJ361502	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_InSpu_Sanger	orf1ab	
9128	KJ361501	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_IS HTS	orf1ab	
9129	KJ361503	NA	Middle East respiratory syndrome coronavirus	Hu-France - FRA2_130569-2013_Isolate_Sanger	orf1ab	
9130	KM027260	NA	Middle East respiratory syndrome coronavirus	Jeddah_C10306/KSA/2014-04-20	orf1ab	
9131	KM027255	NA	Middle East respiratory syndrome coronavirus	Jeddah_C7149/KSA/2014-04-05	orf1ab	
9132	KM027256	NA	Middle East respiratory syndrome coronavirus	Jeddah_C7569/KSA/2014-04-03	orf1ab	
9133	KM027257	NA	Middle East respiratory syndrome coronavirus	Jeddah_C7770/KSA/2014-04-07	orf1ab	
9134	KM027258	NA	Middle East respiratory syndrome coronavirus	Jeddah_C8826/KSA/2014-04-12	orf1ab	
9135	KM027259	NA	Middle East respiratory syndrome coronavirus	Jeddah_C9055/KSA/2014-04-14	orf1ab	
9136	KM027261	NA	Middle East respiratory syndrome coronavirus	Makkah_C9355/KSA/Makkah/2014-04-15	orf1ab	
9137	KM027262	NA	Middle East respiratory syndrome coronavirus	Riyadh_2014KSA_683/KSA/2014	orf1ab	
9138	FJ647225	NA	Murine coronavirus inf-MHV-A59	inf-MHV-A59	orf1ab	
9139	FJ647223	NA	Murine coronavirus MHV-1	MHV-1	orf1ab	
9140	FJ647224	NA	Murine coronavirus MHV-3	MHV-3	orf1ab	
9141	FJ647226	NA	Murine coronavirus MHV-JHM.1A	MHV-JHM.1A	orf1ab	
9142	FJ647218	NA	Murine coronavirus RA59/R13	RA59/R13	orf1ab	
9143	FJ647220	NA	Murine coronavirus RA59/SJHM	RA59/SJHM	orf1ab	
9144	FJ647221	NA	Murine coronavirus repA59/RJHM	repA59/RJHM	orf1ab	
9145	FJ647227	NA	Murine coronavirus repJHM/RA59	repJHM/RA59	orf1ab	
9146	FJ647219	NA	Murine coronavirus RJHM/A	RJHM/A	orf1ab	
9147	FJ647222	NA	Murine coronavirus SA59/RJHM	SA59/RJHM	orf1ab	
9148	FJ884686	NA	Murine hepatitis virus strain A59	A59	orf1ab	
9149	FJ884687	NA	Murine hepatitis virus strain A59	A59	orf1ab	
9150	AF208067	210-13613	Murine hepatitis virus	ML-10	orf1ab	
9151	AF208066	210-13460	Murine hepatitis virus	Penn 97-1	orf1ab	
9152	AF201929	NA	Murine hepatitis virus strain 2	MHV-2	orf1ab	
9153	AF207902	210-13460	Murine hepatitis virus strain	ML-11	orf1ab	
9154	DQ412042	NA	Bat SARS CoV Rf1/2004 Rf1	orf1ab		
9155	DQ412043	NA	Bat SARS CoV Rm1/2004	Rm1	orf1ab	
9156	DQ071615	NA	Bat SARS CoV Rp3/2004Rp3	orf1ab		
9157	KF569996	NA	Rhinolophus affinis coronavirus	LYRa11	orf1ab	
9158	MN908947	NA	Wuhan seafood market pneumonia virus	SARS-CoV-2	orf1ab	
9159	BetaCoV/Wuhan/IVDC-HB-01/2019/EPI_ISL_402119	NA	Wuhan SARS-CoV-2	orf1ab		
9160	BetaCoV/Wuhan/IVDC-HB-04/2020/EPI_ISL_402120	NA	Wuhan SARS-CoV-2	orf1ab		
9161	BetaCoV/Wuhan/IVDC-HB-05/2019/EPI_ISL_402121	NA	Wuhan SARS-CoV-2	orf1ab		
9162	BetaCoV/Wuhan/IPBCAMS-WH-01/2019/EPI_ISL_402123	NA	Wuhan SARS-CoV-2	orf1ab		
9163	BetaCoV/Wuhan/WIV04/2019/EPI_ISL_402124	NA	Wuhan SARS-CoV-2	orf1ab		
9164	BetaCoV/Wuhan-Hu-1/2019/EPI_ISL_402125	NA	Wuhan SARS-CoV-2	orf1ab		
9165	BetaCoV/Wuhan/WIV02/2019/EPI_ISL_402127	NA	Wuhan SARS-CoV-2	orf1ab		
9166	BetaCoV/Wuhan/WIV05/2019/EPI_ISL_402128	NA	Wuhan SARS-CoV-2	orf1ab		
9167	BetaCoV/Wuhan/WIV06/2019/EPI_ISL_402129	NA	Wuhan SARS-CoV-2	orf1ab		
9168	BetaCoV/Wuhan/WIV07/2019/EPI_ISL_402130	NA	Wuhan SARS-CoV-2	orf1ab		
9169	BetaCoV/Wuhan/HBDCD-HB-01/2019/EPI_ISL_402132	NA	Wuhan SARS-CoV-2	orf1ab		
9170	BetaCoV/Wuhan/IPBCAMS-WH-04/2019/EPI_ISL_403929	NA	Wuhan SARS-CoV-2	orf1ab		
9171	BetaCoV/Wuhan/IPBCAMS-WH-03/2019/EPI_ISL_403930	NA	Wuhan SARS-CoV-2	orf1ab		
9172	BetaCoV/Wuhan/IPBCAMS-WH-02/2019/EPI_ISL_403931	NA	Wuhan SARS-CoV-2	orf1ab		

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BetaCoV/Nonthaburi/61/2020/EPI_ISL_403962	NA	Wuhan	SARS-CoV-2	orf1ab
BetaCoV/Nonthaburi/74/2020/EPI_ISL_403963	NA	Wuhan	SARS-CoV-2	orf1ab
BetaCoV/Zhejiang/WZ-01/2020/EPI_ISL_404227	NA	Wuhan	SARS-CoV-2	orf1ab
BetaCoV/Zhejiang/WZ-02/2020/EPI_ISL_404228	NA	Wuhan	SARS-CoV-2	orf1ab
MN908947	NA	Wuhan seafood market pneumonia virus	SARS-CoV-2	spike
BetaCoV/Wuhan/IVDC-HB-01/2019/EPI_ISL_402119	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/IVDC-HB-04/2020/EPI_ISL_402120	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/IVDC-HB-05/2019/EPI_ISL_402121	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/IPBCAMS-WH-01/2019/EPI_ISL_402123	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/WIV04/2019/EPI_ISL_402124	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/Hu-1/2019/EPI_ISL_402125	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/WIV02/2019/EPI_ISL_402127	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/WIV05/2019/EPI_ISL_402128	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/WIV06/2019/EPI_ISL_402129	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/WIV07/2019/EPI_ISL_402130	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/HBCDC-HB-01/2019/EPI_ISL_402132	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/IPBCAMS-WH-04/2019/EPI_ISL_403929	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/IPBCAMS-WH-03/2019/EPI_ISL_403930	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Wuhan/IPBCAMS-WH-02/2019/EPI_ISL_403931	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Nonthaburi/61/2020/EPI_ISL_403962	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Nonthaburi/74/2020/EPI_ISL_403963	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Zhejiang/WZ-01/2020/EPI_ISL_404227	NA	Wuhan	SARS-CoV-2	spike
BetaCoV/Zhejiang/WZ-02/2020/EPI_ISL_404228	NA	Wuhan	SARS-CoV-2	spike
MN908947	NA	Wuhan seafood market pneumonia virus	SARS-CoV-2	membrane
BetaCoV/Wuhan/IVDC-HB-01/2019/EPI_ISL_402119	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/IVDC-HB-04/2020/EPI_ISL_402120	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/IVDC-HB-05/2019/EPI_ISL_402121	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/IPBCAMS-WH-01/2019/EPI_ISL_402123	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/WIV04/2019/EPI_ISL_402124	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/Hu-1/2019/EPI_ISL_402125	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/WIV02/2019/EPI_ISL_402127	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/WIV05/2019/EPI_ISL_402128	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/WIV06/2019/EPI_ISL_402129	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/WIV07/2019/EPI_ISL_402130	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/HBCDC-HB-01/2019/EPI_ISL_402132	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/IPBCAMS-WH-04/2019/EPI_ISL_403929	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/IPBCAMS-WH-03/2019/EPI_ISL_403930	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Wuhan/IPBCAMS-WH-02/2019/EPI_ISL_403931	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Nonthaburi/61/2020/EPI_ISL_403962	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Nonthaburi/74/2020/EPI_ISL_403963	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Zhejiang/WZ-01/2020/EPI_ISL_404227	NA	Wuhan	SARS-CoV-2	membrane
BetaCoV/Zhejiang/WZ-02/2020/EPI_ISL_404228	NA	Wuhan	SARS-CoV-2	membrane
MN908947	NA	Wuhan seafood market pneumonia virus	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/IVDC-HB-01/2019/EPI_ISL_402119	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/IVDC-HB-04/2020/EPI_ISL_402120	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/IVDC-HB-05/2019/EPI_ISL_402121	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/IPBCAMS-WH-01/2019/EPI_ISL_402123	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/WIV04/2019/EPI_ISL_402124	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/Hu-1/2019/EPI_ISL_402125	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/WIV02/2019/EPI_ISL_402127	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/WIV05/2019/EPI_ISL_402128	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/WIV06/2019/EPI_ISL_402129	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/WIV07/2019/EPI_ISL_402130	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/HBCDC-HB-01/2019/EPI_ISL_402132	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/IPBCAMS-WH-04/2019/EPI_ISL_403929	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/IPBCAMS-WH-03/2019/EPI_ISL_403930	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Wuhan/IPBCAMS-WH-02/2019/EPI_ISL_403931	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Nonthaburi/61/2020/EPI_ISL_403962	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Nonthaburi/74/2020/EPI_ISL_403963	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Zhejiang/WZ-01/2020/EPI_ISL_404227	NA	Wuhan	SARS-CoV-2	nucleocapsid
BetaCoV/Zhejiang/WZ-02/2020/EPI_ISL_404228	NA	Wuhan	SARS-CoV-2	nucleocapsid
GU190215	NA	BM48-31/BGR/2008	BM48-31	orf1ab
GU190215	NA	BM48-31/BGR/2008	BM48-31	spike
GU190215	NA	BM48-31/BGR/2008	BM48-31	membrane
GU190215	NA	BM48-31/BGR/2008	BM48-31	nucleocapsid
MG772933	NA	bat-SL-CoVZC45	CoVZC45	orf1ab
MG772933	NA	bat-SL-CoVZC45	CoVZC45	spike
MG772933	NA	bat-SL-CoVZC45	CoVZC45	membrane
MG772933	NA	bat-SL-CoVZC45	CoVZC45	nucleocapsid
MG772934	NA	bat-SL-CoVZXC21	CoVZXC21	orf1ab
MG772934	NA	bat-SL-CoVZXC21	CoVZXC21	spike
MG772934	NA	bat-SL-CoVZXC21	CoVZXC21	membrane
MG772934	NA	bat-SL-CoVZXC21	CoVZXC21	nucleocapsid
EPI_ISL_402131NA	bat/Yunnan/RaTG13/2013	bat/RaTG13/2013		orf1ab
EPI_ISL_402131NA	bat/Yunnan/RaTG13/2013	bat/RaTG13/2013		spike
EPI_ISL_402131NA	bat/Yunnan/RaTG13/2013	bat/RaTG13/2013		membrane
EPI_ISL_402131NA	bat/Yunnan/RaTG13/2013	bat/RaTG13/2013		nucleocapsid
EPI_ISL_410539NA	pangolin/Guangxi/P1E/2017	pangolin/P1E/2017		orf1ab
EPI_ISL_410539NA	pangolin/Guangxi/P1E/2017	pangolin/P1E/2017		spike
EPI_ISL_410539NA	pangolin/Guangxi/P1E/2017	pangolin/P1E/2017		membrane
EPI_ISL_410539NA	pangolin/Guangxi/P1E/2017	pangolin/P1E/2017		nucleocapsid

3155 Table S2. List of the authors of the sequences in this study shared by GISAID Initiative

Accession ID	Virus name	Location	Collection date	Originating lab	Submitting lab	Authors
EPI_ISL_410539	BetaCoV/pangolin/ Guangxi/P1E/2017	Asia / China / Guangxi	2017	Beijing Institute of Microbiology and Epidemiology	Beijing Institute of Microbiology and Epidemiology	Wu-Chun Cao; Tommy Tsan-Yuk Lam; Na Jia; Ya-Wei Zhang; Jia-Fu Jiang; Bao-Gui Jiang
EPI_ISL_402119	BetaCoV/Wuhan/I VDC-HB-01/2019	Asia / China / Hubei / Wuhan	12/30/2019	National Institute for Viral Disease Control and Prevention, China CDC	National Institute for Viral Disease Control and Prevention, China CDC	Wenjie Tan, Xiang Zhao, Wenling Wang, Xuejun Ma, Yongzhong Jiang, Roujian Lu, Ji Wang, Weimin Zhou, Peihua Niu, Peipei Liu, Faxian Zhan, Weifeng Shi, Baoying Huang, Jun Liu, Li Zhao, Yao Meng, Xiaozhou He, Fei Ye, Na Zhu, Yang Li, Jing Chen, Wenbo Xu, George F. Gao, Guizhen Wu
EPI_ISL_402120	BetaCoV/Wuhan/I VDC-HB-04/2020	Asia / China / Hubei / Wuhan	1/1/2020	National Institute for Viral Disease Control and Prevention, China CDC	National Institute for Viral Disease Control and Prevention, China CDC	Wenjie Tan, Xiang Zhao, Wenling Wang, Xuejun Ma, Yongzhong Jiang, Roujian Lu, Ji Wang, Weimin Zhou, Peihua Niu, Peipei Liu, Faxian Zhan, Weifeng Shi, Baoying Huang, Jun Liu, Li Zhao, Yao Meng, Xiaozhou He, Fei Ye, Na Zhu, Yang Li, Jing Chen, Wenbo Xu, George F. Gao, Guizhen Wu
EPI_ISL_402121	BetaCoV/Wuhan/I VDC-HB-05/2019	Asia / China / Hubei / Wuhan	12/30/2019	National Institute for Viral Disease Control and	National Institute for Viral Disease Control and	Wenjie Tan, Xuejun Ma, Xiang Zhao, Wenling



				Prevention, China CDC	Prevention, China CDC	Wang, Yongzhong Jiang, Roujian Lu, Ji Wang, Peihua Niu, Weimin Zhou, Faxian Zhan, Weifeng Shi, Baoying Huang, Jun Liu, Li Zhao, Yao Meng, Fei Ye, Na Zhu, Xiaozhou He, Peipei Liu, Yang Li, Jing Chen, Wenbo Xu, George F. Gao, Guizhen Wu
EPI_ISL_402123	BetaCoV/Wuhan/IP BCAMS-WH- 01/2019	Asia / China / Hubei / Wuhan	12/24/2019	Institute of Pathogen Biology, Chinese Academy of Medical Sciences & Peking Union Medical College	Institute of Pathogen Biology, Chinese Academy of Medical Sciences & Peking Union Medical College	Lili Ren, Jianwei Wang, Qi Jin, Zichun Xiang, Zhiqiang Wu, Chao Wu, Yiwei Liu
EPI_ISL_402124	BetaCoV/Wuhan/ WIV04/2019	Asia / China / Hubei / Wuhan	12/30/2019	Wuhan Jinyintan Hospital	Wuhan Institute of Virology, Chinese Academy of Sciences	Peng Zhou, Xing- Lou Yang, Ding-Yu Zhang, Lei Zhang, Yan Zhu, Hao-Rui Si, Zhengli Shi
EPI_ISL_402125	BetaCoV/Wuhan- Hu-1/2019	Asia / China	12/31/2019	unknown	National Institute for Communicable Disease Control and Prevention (ICDC) Chinese Center for Disease Control and Prevention (China CDC)	Zhang,Y.-Z., Wu,F., Chen,Y.-M., Pei,Y.- Y., Xu,L., Wang,W., Zhao,S., Yu,B., Hu,Y., Tao,Z.-W., Song,Z.-G., Tian,J.- H., Zhang,Y.-L., Liu,Y., Zheng,J.-J., Dai,F.-H., Wang,Q.- M., She,J.-L. and Zhu,T.-Y.
EPI_ISL_402127	BetaCoV/Wuhan/ WIV02/2019	Asia / China / Hubei / Wuhan	12/30/2019	Wuhan Jinyintan Hospital	Wuhan Institute of Virology, Chinese Academy of Sciences	Peng Zhou, Xing- Lou Yang, Ding-Yu Zhang, Lei Zhang, Yan Zhu, Hao-Rui Si, Zhengli Shi
EPI_ISL_402128	BetaCoV/Wuhan/ WIV05/2019	Asia / China / Hubei / Wuhan	12/30/2019	Wuhan Jinyintan Hospital	Wuhan Institute of Virology, Chinese Academy of Sciences	Peng Zhou, Xing- Lou Yang, Ding-Yu Zhang, Lei Zhang, Yan Zhu, Hao-Rui Si, Zhengli Shi

EPI_ISL_402129	BetaCoV/Wuhan/ WIV06/2019	Asia / China / Hubei / Wuhan	12/30/2019	Wuhan Jinyintan Hospital	Wuhan Institute of Virology, Chinese Academy of Sciences	Peng Zhou, Xing- Lou Yang, Ding-Yu Zhang, Lei Zhang, Yan Zhu, Hao-Rui Si, Zhengli Shi
EPI_ISL_402130	BetaCoV/Wuhan/ WIV07/2019	Asia / China / Hubei / Wuhan	12/30/2019	Wuhan Jinyintan Hospital	Wuhan Institute of Virology, Chinese Academy of Sciences	Peng Zhou, Xing- Lou Yang, Ding-Yu Zhang, Lei Zhang, Yan Zhu, Hao-Rui Si, Zhengli Shi
EPI_ISL_402132	BetaCoV/Wuhan/H BCDC-HB-01/2019	Asia / China / Hubei / Wuhan	12/30/2019	Wuhan Jinyintan Hospital	Hubei Provincial Center for Disease Control and Prevention	Bin Fang, Xiang Li, Xiao Yu, Linlin Liu, Bo Yang, Faxian Zhan, Guojun Ye, Xixiang Huo, Junqiang Xu, Bo Yu, Kun Cai, Jing Li, Yongzhong Jiang.
EPI_ISL_403929	BetaCoV/Wuhan/IP BCAMS-WH- 04/2019	Asia / China / Hubei / Wuhan	12/30/2019	Institute of Pathogen Biology, Chinese Academy of Medical Sciences & Peking Union Medical College	Institute of Pathogen Biology, Chinese Academy of Medical Sciences & Peking Union Medical College	Lili Ren, Jianwei Wang, Qi Jin, Zichun Xiang, Zhiqiang Wu, Chao Wu, Yiwei Liu
EPI_ISL_403930	BetaCoV/Wuhan/IP BCAMS-WH- 03/2019	Asia / China / Hubei / Wuhan	12/30/2019	Institute of Pathogen Biology, Chinese Academy of Medical Sciences & Peking Union Medical College	Institute of Pathogen Biology, Chinese Academy of Medical Sciences & Peking Union Medical College	Lili Ren, Jianwei Wang, Qi Jin, Zichun Xiang, Zhiqiang Wu, Chao Wu, Yiwei Liu
EPI_ISL_403931	BetaCoV/Wuhan/IP BCAMS-WH- 02/2019	Asia / China / Hubei / Wuhan	12/30/2019	Institute of Pathogen Biology, Chinese Academy of Medical Sciences & Peking Union Medical College	Institute of Pathogen Biology, Chinese Academy of Medical Sciences & Peking Union Medical College	Lili Ren, Jianwei Wang, Qi Jin, Zichun Xiang, Zhiqiang Wu, Chao Wu, Yiwei Liu
EPI_ISL_403962	BetaCoV/Nonthabu ri/61/2020	Asia / Thailand / Nonthaburi	1/8/2020	Bamrasnaradura Hospital	1. Department of Medical Sciences, Ministry of Public Health, Thailand 2. Thai Red Cross Emerging Infectious Diseases - Health Science Centre 3. Department of Disease Control, Ministry of Public Health, Thailand	Pilailuk,Okada; Siripaporn,Phuygun ; Thanutsapa,Thana dachakul; Supaporn,Wachara pluesadee; Sittiporn,Parnmen; Warawan,Wongbo ot; Sunthareeya,Waich aroen; Rome,Buathong;

EPI_ISL_403963	BetaCoV/Nonthaburi/74/2020	Asia / Thailand / Nonthaburi	1/13/2020	Bamrasnaradura Hospital	1. Department of Medical Sciences, Ministry of Public Health, Thailand 2. Thai Red Cross Emerging Infectious Diseases - Health Science Centre 3. Department of Disease Control, Ministry of Public Health, Thailand	Malinee,Chittagan pitch; Nanthawan,Mekha Pilailuk,Okada; Siripaporn,Phuygun ; Thanutsapa,Thana dachakul; Supaporn,Wachara pluesadee; Sittiporn,Parmmen; Warawan,Wongbo ot; Sunthareeya,Waich aroen; Rome,Buathong; Malinee,Chittagan pitch; Nanthawan,Mekha
EPI_ISL_404227	BetaCoV/Zhejiang/WZ-01/2020	Asia / China / Zhejiang	1/16/2020	Zhejiang Provincial Center for Disease Control and Prevention	Department of Microbiology, Zhejiang Provincial Center for Disease Control and Prevention	Yin Chen, Yanjun Zhang, Haiyan Mao, Junhang Pan, Xiuyu Lou, Yiyu Lu, Juying Yan, Hanping Zhu, Jian Gao, Yan Feng, Yi Sun, Hao Yan, Zhen Li, Yisheng Sun, Liming Gong, Qiong Ge, Wen Shi, Xinying Wang, Wenwu Yao, Zhangnv Yang, Fang Xu, Chen Chen, Enfu Chen, Zhen Wang, Zhiping Chen, Jianmin Jiang, Chonggao Hu
EPI_ISL_404228	BetaCoV/Zhejiang/WZ-02/2020	Asia / China / Zhejiang	1/17/2020	Zhejiang Provincial Center for Disease Control and Prevention	Department of Microbiology, Zhejiang Provincial Center for Disease Control and Prevention	YanJun Zhang, Yin Chen, Haiyan Mao, Junhang Pan, Xiuyu Lou, Yiyu Lu, Juying Yan, Hanping Zhu, Jian Gao, Yan Feng, Yi Sun, Hao Yan, Zhen Li, Yisheng Sun, Liming Gong, Qiong Ge, Wen Shi,

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Xinying Wang,  
Wenwu Yao,  
Zhangnv Yang,  
Fang Xu, Chen  
Chen, Enfu Chen,  
Zhen Wang,  
Zhiping Chen,  
Jianmin Jiang,  
Chonggao Hu

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