

[illegible]

**Table S6. Mutations detected across the whole genome of B.1.1 lineage from 2020 to 2022**

[illegible]

**Table S7. Mutations detected across the whole genome of B.1.1.348 lineage in 2020**

\*envelope (E), membrane (M), nucleocapsid (N), non-structural protein (nsp), papain-like protease (PLpro), RNA-dependent RNA-polymerase RdRp, spike (S)

**Table S8. Mutations detected across the whole genome of B.1.1.52 lineage from 2020**

Genes	3CLpro		M		N		nsp1	nsp2	nsp5	nsp6	nsp8	nsp14	orf3a		Plpro		RdRp		S
Positions	142	196	210	212	203	204	84	424	218	220	138	349	23	255	666	1639	257	323	614
Wuhan Hu-1	N	T	H	S	R	G	V	G	S	F	Y	K	A	V	T	T	V	P	D
April 2020 (N=5)		M	R	R	K	R		C	F		H		S	del	S	A		L	G
May 2020 (N=4)	S		R	R	K	R		C		V	H					A	F	L	G
June 2020 (N=4)			R	R	K	R	I				H	N		del		A		L	G

\*3C-like protease (3CLpro), membrane (M), nucleocapsid (N), non-structural protein (nsp), open-reading frame (ORF), papain-like protease (PLpro), RNA-dependent RNA-polymerase RdRp, spike (S)

**Table S9. Mutations detected across the whole genome of C.1 lineage from 2020 to 2021**

Genes	3CLpro		M		N								nsp1		nsp2		nsp4			nsp6		nsp8			nsp13			nsp14			ORF3a				ORF8		PLpro			RdRp		S	
Positions	15	38	8	68	34	70	141	203	204	272	382	384	49	156	200	218	438	457	37	29	138	178	18	392	403	305	516	202	240	254	255	24	62	428	945	1639	323	98					
Wuhan Hu1	G	C	I	A	G	Q	T	R	G	Q	L	Q	G	D	P	S	L	A	L	G	Y	P	A	R	A	A	I	T	V	P	G	V	S	V	T	K	T	P	S				
April 2020 (N=4)	S			del					K	R		S	H		N	F						H										del		I		A	L						
May 2020 (N=7)	S	G					I	K	R				H	C	N	S																del		I		A	L						
June 2020 (N=4)	S			V				K	R		R		H											C								del		I			L						
July 2020 (N=4)	S				W			K	R				H							F			S									del		I			L						
August 2020 (N=12)	S					R		K	R				H				F	T		F		S			T							del		I	R		L						
September 2020 (N=5)	S					R		K	R				H																del	S			del		I	R		L	F				
October 2020 (N=1)								K	R																								del		I		A	L					
July 2021 (N=1)	S							K	R				H																				del		I			L					

\*3C-like protease (3CLpro), membrane (M), nucleocapsid (N), non-structural protein (nsp), open-reading frame (ORF), papain-like protease (PLpro), RNA-dependent RNA-polymerase RdRp, spike (S)

**Table S10. Mutations detected across the whole genome of C.1.2 lineage from 2020 to 2021**

Genes	3CLpro																E		M		N										nsp1										nsp2			nsp4				nsp6				nsp10	nsp14	nsp15	nsp16	ORF3a															
Positions	15	24	90	108	21	68	29	82	13	80	186	203	204	383	384	85	87	102	110	141	142	143	166	157	181	429	33	233	289	438	37	106	107	108	111	68	33	160	18	33	34	67	95	155	181	216	223	229	238	255	275																				
Wuhan Hu-1	G	T	K	P	L	S	L	I	P	P	S	R	G	P	Q	M	E	E	H	K	S	F	S	V	P	T	M	V	I	L	L	S	G	F	T	G	T	K	G	A	T	K	L	D	E	S	T	T	D	V	L																				
June 2021 (N=7)	S	I			I	F	F	T	L		P	K	R		H			K																																																					
July 2021 (N=10)	S	I			I	P	F	T	L	R		K	R		L	H	del		K		del	del	del		I		I																																												
August 2021 (N=16)	S	I		S	I	P	F	T	L	R		K	R		L	H			K																																																				
September 2021 (N=11)	S	I			I	P	F	T	L	R	P	K	R		L	H			K	L				G																																															
October 2021 (N=4)	S		R		I	F	F	T	L	R		K	R		L	H			K																																																				
November 2021 (N=1)	S					F			T	L		K	R		H				K																																																				
December 2021 (N=2)	S	I			I	F	T		L			K	R		H				K																																																				

  

Genes	ORF7a		ORF7b		ORF8				Phro								RdRp				S																																				
Positions	43	40	7	16	120	121	93	126	153	237	385	428	819	822	864	1274	1693	140	184	323	337	744	9	25	26	67	75	105	136	143	144	152	190	215	241	242	243	244	440	449	477	478	484	501	585	614	655	679	681	716	859	879	1101				
Wuhan Hu-1	N	T	L	F	F	I	S	S	P	T	I	T	T	P	T	H	K	D	Q	P	G	E	P	P	P	A	G	I	C	V	Y	W	R	D	L	L	A	L	N	Y	S	T	E	N	L	D	H	N	P	T	T	A	H				
June 2021 (N=7)																																																									
July 2021 (N=10)																																																									
August 2021 (N=16)																																																									
September 2021 (N=11)																																																									
October 2021 (N=4)																																																									
November 2021 (N=1)																																																									
December 2021 (N=2)																																																									

\*3C-like protease (3CLpro), envelope (E), membrane (M), nucleocapsid (N), non-structural protein (nsp), open-reading frame (ORF), papain-like protease (PLpro), RNA-dependent RNA-polymerase RdRp, spike (S)

**Table S11. Mutations detected across the whole genome of C.2 lineage from 2020**

Genes	3CLpro	N		nsp2	nsp4	nsp6	nsp14	nsp15	nsp16	ORF3a	ORF7a	PLpro	Rdrp		S			
Positions	15	203	204	274	264	37	85	44	182	23	63	428	302	323	614	623	679	1219
Wuhan Hu-1	G	R	G	L	L	L	A	E	K	A	F	T	L	P	D	A	N	G
July 2020 (N=1)	S	K	R		I		S					I	S	L	G			V
August 2020 (N=2)	S	K	R	F			S	V			del	I	S	L	G	V	S	
September 2020 (N=3)	S	K	R			F	S		N	S		I	S	L	G			

\*3C-like protease (3CLpro), nucleocapsid (N), non-structural protein (nsp), open-reading frame (ORF), papain-like protease (PLpro), RNA-dependent RNA-polymerase RdRp, spike (S)