

## SARS-CoV-2 &amp; lambda.apr

		Section 1									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1)	1	10	20	30	40	50	60	70	80	97
	(1)	GGGCGGCGACCTCGCGGGTTTTTCGCTATTTATGAAAATTTTCCGGTTTAAGGCGTTTCCGTTCTTCTTCGTCATAACTTAATGTTTTTATTTAAAT									
	(1)	-----									
		Section 2									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(98)	98	110	120	130	140	150	160	170	180	194
	(98)	ACCCTCTGAAAAGAAAGGAAACGACAGGTGCTGAAAGCGAGGCTTTTTGGCCTCTGTCTGTTTCTTTCTCTGTTTTTGTCCGTGGAATGAACAATGG									
	(1)	-----									
		Section 3									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(195)	195	200	210	220	230	240	250	260	270	291
	(195)	AAGTCAACAAAAAGCAGCTGGCTGACATTTTCGGTGCGAGTATCCGTACCATTCAGAACTGGCAGGAACAGGGAATGCCCGTTCTGCGAGGCGGTGG									
	(1)	-----									
		Section 4									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(292)	292	300	310	320	330	340	350	360	370	388
	(292)	CAAGGGTAATGAGGTGCTTTATGACTCTGCCGCCGTCATAAAATGGTATGCCGAAAGGGATGCTGAAATTGAGAACGAAAAGCTGCGCCGGGAGGTT									
	(1)	-----									
		Section 5									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(389)	389	400	410	420	430	440	450	460	470	485
	(389)	GAAGAACTGCGGCAGGCCAGCGAGGCAGATCTCCAGCCAGGAACTATTGAGTACGAACGCCATCGACTTACGCGTGCGCAGGCCGACGCACAGGAAC									
	(1)	-----									
		Section 6									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(486)	486	500	510	520	530	540	550	560	570	582
	(486)	TGAAGAATGCCAGAGACTCCGCTGAAGTGGTGGAAACCGCATTTCTGTACTTTTCGTGCTGTGCGGGATCGCAGGTGAAATTGCCAGTATTCTCGACGG									
	(1)	-----									
		Section 7									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(583)	583	590	600	610	620	630	640	650	660	679
	(583)	GCTCCCCCTGTCTGGTGCAGCGGGCGTTTTCCGGAACTGGAAAACCGACATGTTGATTTCTGAAACGGGATATCATCAAAGCCATGAACAAAGCAGCC									
	(1)	-----									

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Section 8												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(680)	680	690	700	710	720	730	740	750	760	776	
	(680)	GCGCTGGATGAACTGATACCGGGGTTGCTGAGTGAATATATCGAACAGTCAGGTTAACAGGCTGCGGCATTTTGTCCGCGCCGGGCTTCGCTCACTG										
	(1)	-----										
Section 9												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(777)	777	790	800	810	820	830	840	850	860	873	
	(777)	TTCAGGCCGGAGCCACAGACCGCGTTGAATGGGCGGATGCTAATTACTATCTCCCGAAAGAATCCGCATACCAGGAAGGGCGCTGGGAAACACTGC										
	(1)	-----										
Section 10												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(874)	874	880	890	900	910	920	930	940	950	960	970
	(874)	CCTTTCAGCGGGCCATCATGAATGCGATGGGCAGCGACTACATCCGTGAGGTGAATGTGGTGAAGTCTGCCCGTGTGCGTTATTCCAAAATGCTGCT										
	(1)	-----										
Section 11												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(971)	971	980	990	1000	1010	1020	1030	1040	1050	1067	
	(971)	GGGTGTTTATGCCTACTTTATAGAGCATAAGCAGCGCAACACCCTTATCTGGTTGCCGACGGATGGTGATGCCGAGAACTTTATGAAAACCCACGTT										
	(1)	-----										
Section 12												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1068)	1068	1080	1090	1100	1110	1120	1130	1140	1150	1164	
	(1068)	GAGCCGACTATTTCGTGATATTCCGTCGCTGCTGGCGCTGGCCCCGTGGTATGGCAAAAAGCACCGGGATAACACGCTCACCATGAAGCGTTTCACTA										
	(1)	-----										
Section 13												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1165)	1165	1170	1180	1190	1200	1210	1220	1230	1240	1250	1261
	(1165)	ATGGGCGTGGCTTCTGGTGCCCTGGGCGGTAAAGCGGCAAAAACTACCGTGAAAAGTCGGTGATGTGGCGGGTTATGATGAACTTGCTGCTTTTGA										
	(1)	-----										
Section 14												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1262)	1262	1270	1280	1290	1300	1310	1320	1330	1340	1358	
	(1262)	TGATGATATTGAACAGGAAGGCTCTCCGACGTTCTGGGTGACAAGCGTATTGAAGGCTCGGTCTGGCCAAAGTCCATCCGTGGCTCCACGCCAAAA										
	(1)	-----										

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		Section 15									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1359)	1359	1370	1380	1390	1400	1410	1420	1430	1440	1455
	(1359)	GTGAGAGGCACCTGTCAGATTGAGCGTGCAGCCAGTGAATCCCCGCATTTTATGCGTTTTTCATGTTGCCTGCCCGCATTGCGGGGAGGAGCAGTATC									
	(1)	-----									
		Section 16									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1456)	1456	1470	1480	1490	1500	1510	1520	1530	1540	1552
	(1456)	TTAAATTTGGCGACAAAGAGACGCCGTTTGGCCTCAAATGGACGCCGGATGACCCCTCCAGCGTGTTTTATCTCTGCGAGCATAATGCCTGCGTCAT									
	(1)	-----									
		Section 17									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1553)	1553	1560	1570	1580	1590	1600	1610	1620	1630	1649
	(1553)	CCGCCAGCAGGAGCTGGACTTTACTGATGCCCGTTATATCTGCGAAAAGACCGGGATCTGGACCCGTGATGGCATTCTCTGGTTTTTCGTATCCGGT									
	(1)	-----									
		Section 18									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1650)	1650	1660	1670	1680	1690	1700	1710	1720	1730	1746
	(1650)	GAAGAGATTGAGCCACCTGACAGTGTGACCTTTCACATCTGGACAGCGTACAGCCCGTTACCACCTGGGTGCAGATTGTCAAAGACTGGATGAAAA									
	(1)	-----									
		Section 19									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1747)	1747	1760	1770	1780	1790	1800	1810	1820	1830	1843
	(1747)	CGAAAGGGGATACGGGAAAACGTAAACCTTCGTAAACACCACGCTCGGTGAGACGTGGGAGGCGAAAATTGGCGAACGTCCGGATGCTGAAGTGAT									
	(1)	-----									
		Section 20									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1844)	1844	1850	1860	1870	1880	1890	1900	1910	1920	1940
	(1844)	GGCAGAGCGGAAAGAGCATTATTCAGCGCCCGTTCTTGACCGTGTGGCTTACCTGACCGCCGGTATCGACTCCCAGCTGGACCGCTACGAAATGCGC									
	(1)	-----									
		Section 21									
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(1941)	1941	1950	1960	1970	1980	1990	2000	2010	2020	2037
	(1941)	GTATGGGGATGGGGGCCGGGTGAGGAAAGCTGGCTGATTGACCGGCAGATTATTATGGGCCGCCACGACGATGAACAGACGCTGCTGCGTGTGGATG									
	(1)	-----									

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											Section 22
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(2038)	2038	2050	2060	2070	2080	2090	2100	2110	2120	2134
	(2038)	AGGCCATCAATAAAACCTATACCCGCCGGAATGGTGCAGAAATGTCGATATCCCGTATCTGCTGGGATACTGGCGGGATTGACCCGACCATTGTGTA									
	(1)	-----									
											Section 23
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(2135)	2135	2140	2150	2160	2170	2180	2190	2200	2210	2231
	(2135)	TGAACGCTCGAAAAACATGGGCTGTTCCGGGTGATCCCCATTAAAGGGGCATCCGTCTACGGAAGCCGGTGGCCAGCATGCCACGTAAGCGAAAC									
	(1)	-----									
											Section 24
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(2232)	2232	2240	2250	2260	2270	2280	2290	2300	2310	2328
	(2232)	AAAAACGGGGTTTACCTTACCGAAATCGGTACGGATACCGCGAAAGAGCAGATTTATAACCGCTTCACACTGACGCCGGAAGGGGATGAACCGCTTC									
	(1)	-----									
											Section 25
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(2329)	2329	2340	2350	2360	2370	2380	2390	2400	2410	2425
	(2329)	CCGGTGCCGTTCACTTCCCGAATAACCCGGATATTTTTGATCTGACCGAAGCGCAGCAGCTGACTGCTGAAGAGCAGGTCGAAAAATGGGTGGATGG									
	(1)	-----									
											Section 26
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(2426)	2426	2440	2450	2460	2470	2480	2490	2500	2510	2522
	(2426)	CAGGAAAAAATACTGTGGGACAGCAAAAAGCGACGCAATGAGGCACTCGACTGCTTCGTTTATGCGCTGGCGGCGCTGCGCATCAGTATTTCCCGC									
	(1)	-----									
											Section 27
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(2523)	2523	2530	2540	2550	2560	2570	2580	2590	2600	2619
	(2523)	TGGCAGCTGGATCTCAGTGCGCTGCTGGCGAGCCTGCAGGAAGAGGATGGTGCAGCAACCAACAAGAAAACACTGGCAGATTACGCCCGTGCCCTTAT									
	(1)	-----									
											Section 28
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(2620)	2620	2630	2640	2650	2660	2670	2680	2690	2700	2716
	(2620)	CCGGAGAGGATGAATGACGCGACAGGAAGAACTTGCCCGTGCCCGTGCAGCACTGCATGACCTGATGACAGGTAAACGGGTGGCAACAGTACAGAAA									
	(1)	-----									

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											Section 29
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(2717)	2717	2730	2740	2750	2760	2770	2780	2790	2800	2813
	(2717)	GACGGACGAAGGGTGGAGTTTACGGCCACTTCCGTGTCTGACCTGAAAAAATATATTGCAGAGCTGGAAGTGCAGACCGGCATGACACAGCGACGCA									
	(1)	-----									
											Section 30
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(2814)	2814	2820	2830	2840	2850	2860	2870	2880	2890	2910
	(2814)	GGGGACCTGCAGGATTTTATGTATGAAAACGCCACCATTCCCACCTTCTGGGGCCGGACGGCATGACATCGCTGCGCGAATATGCCGGTTATCAC									
	(1)	-----									
											Section 31
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(2911)	2911	2920	2930	2940	2950	2960	2970	2980	2990	3007
	(2911)	GGCGGTGGCAGCGGATTTGGAGGGCAGTTGCGGTCGTGGAACCCACCGAGTGAAAGTGTGGATGCAGCCCTGTTGCCCACTTTACCCGTGGCAATG									
	(1)	-----									
											Section 32
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(3008)	3008	3020	3030	3040	3050	3060	3070	3080	3090	3104
	(3008)	CCCGCGCAGACGATCTGGTACGCAATAACGGCTATGCCGCCAACGCCATCCAGCTGCATCAGGATCATATCGTCGGGTCTTTTTTCCGGCTCAGTCA									
	(1)	-----									
											Section 33
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(3105)	3105	3110	3120	3130	3140	3150	3160	3170	3180	3201
	(3105)	TCGCCCAAGCTGGCGCTATCTGGGCATCGGGGAGGAAGAAGCCCGTGCCTTTTCCCGCGAGGTTGAAGCGGCATGGAAAGAGTTTGCCGAGGATGAC									
	(1)	-----									
											Section 34
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(3202)	3202	3210	3220	3230	3240	3250	3260	3270	3280	3298
	(3202)	TGCTGCTGCATTGACGTTGAGCGAAAAACGCACGTTTACCATGATGATTGCGGAAGGTGTGGCCATGCACGCCTTTAACGGTGAAGTGTTCGTTTCAAG									
	(1)	-----									
											Section 35
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(3299)	3299	3310	3320	3330	3340	3350	3360	3370	3380	3395
	(3299)	CCACCTGGGATACCAGTTCGTCGCGGCTTTTCCGGACACAGTTCCGGATGGTCAGCCCGAAGCGCATCAGCAACCCGAACAATACCGGCGACAGCCG									
	(1)	-----									

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											Section 36	
lambda NC_001416.1	(3396)	3396	3410	3420	3430	3440	3450	3460	3470	3480	3492	
SARS-CoV-2 NC_045512.2	(3396)	GAACTGCCGTGCCGGTGTGCAGATTAATGACAGCGGTGCGGCGCTGGGATATTACGTCAGCGAGGACGGGTATCCTGGCTGGATGCCGCAGAAATGG										
	(1)	-----										
											Section 37	
lamhda NC_001416.1	(3493)	3493	3500	3510	3520	3530	3540	3550	3560	3570	3589	
SARS-CoV-2 NC_045512.2	(3493)	ACATGGATACCCCGTGAGTTACCCGGCGGGCGCGCCTCGTTCATTACGTTTTTTGAACCCGTGGAGGACGGGCAGACTCGCGGTGCAAATGTGTTTT										
	(1)	-----										
											Section 38	
lambda NC_001416.1	(3590)	3590	3600	3610	3620	3630	3640	3650	3660	3670	3686	
SARS-CoV-2 NC_045512.2	(3590)	ACAGCGTGATGGAGCAGATGAAGATGCTCGACACGCTGCAGAACACGCAGCTGCAGAGCGCCATTGTGAAGGCGATGTATGCCGCCACCATTGAGAG										
	(1)	-----										
											Section 39	
lamhda NC_001416.1	(3687)	3687	3700	3710	3720	3730	3740	3750	3760	3770	3783	
SARS-CoV-2 NC_045512.2	(3687)	TGAGCTGGATACGCAGTCAGCGATGGATTTTATTCTGGGCGCGAACAGTCAGGAGCAGCGGGAAAGGCTGACCGGCTGGATTGGTGAAATTGCCGCG										
	(1)	-----										
											Section 40	
lambda NC_001416.1	(3784)	3784	3790	3800	3810	3820	3830	3840	3850	3860	3870	3880
SARS-CoV-2 NC_045512.2	(3784)	TATTACGCCGCAGCGCCGGTCCGGCTGGGAGGCGCAAAAGTACCGCACCTGATGCCGGGTGACTCACTGAACCTGCAGACGGCTCAGGATACGGATA										
	(1)	-----										
											Section 41	
lambda NC_001416.1	(3881)	3881	3890	3900	3910	3920	3930	3940	3950	3960	3977	
SARS-CoV-2 NC_045512.2	(3881)	ACGGCTACTCCGTGTTTGAGCAGTCACTGCTGCGGTATATCGCTGCCGGGCTGGGTGTCTCGTATGAGCAGCTTTCCCGGAATTACGCCCAGATGAG										
	(1)	-----										
											Section 42	
lamhda NC_001416.1	(3978)	3978	3990	4000	4010	4020	4030	4040	4050	4060	4074	
SARS-CoV-2 NC_045512.2	(3978)	CTACTCCACGGCACGGGCCAGTGCGAACGAGTCGTGGGCGTACTTTATGGGGCGGCGAAAATTCGTCGCATCCCGTCAGGCGAGCCAGATGTTTCTG										
	(1)	-----										

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Section 43												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(4075)	4075	4080	4090	4100	4110	4120	4130	4140	4150	4160	4171
	(4075)	TGCTGGCTGGAAGAGGCCATCGTTCGCCGCGTGGTGACGTTACCTTCAAAAGCGCGCTTCAGTTTTTCAGGAAGCCCGCAGTGCCTGGGGAACTGCG										
	(1)	-----										
Section 44												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(4172)	4172	4180	4190	4200	4210	4220	4230	4240	4250		4268
	(4172)	ACTGGATAGGCTCCGGTCGTATGGCCATCGATGGTCTGAAAGAAGTTCAGGAAGCGGTGATGCTGATAGAAGCCGGACTGAGTACCTACGAGAAAGA										
	(1)	-----										
Section 45												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(4269)	4269	4280	4290	4300	4310	4320	4330	4340	4350		4365
	(4269)	GTGCGCAAAACGCGGTGACGACTATCAGGAAATTTTGTCCAGCAGGTCCGTGAAACGATGGAGCGCCGTGCAGCCGGTCTTAAACGCCCGCCTGG										
	(1)	-----										
Section 46												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(4366)	4366	4380	4390	4400	4410	4420	4430	4440	4450		4462
	(4366)	GCGGCTGCAGCATTTGAATCCGGGCTGCGACAATCAACAGAGGAGGAGAAGAGTGACAGCAGAGCTGCGTAATCTCCCGCATATTGCCAGCATGGCC										
	(1)	-----										
Section 47												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(4463)	4463	4470	4480	4490	4500	4510	4520	4530	4540		4559
	(4463)	TTTAATGAGCCGCTGATGCTTGAACCCGCCTATGCGCGGGTTTTCTTTTGTGCGCTTGACAGGCCAGCTTGGGATCAGCAGCCTGACGGATGCGGTGT										
	(1)	-----										
Section 48												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(4560)	4560	4570	4580	4590	4600	4610	4620	4630	4640		4656
	(4560)	CCGGCGACAGCCTGACTGCCAGGAGGCACTCGCGACGCTGGCATTATCCGGTGATGATGACGGACCACGACAGGCCCGCAGTTATCAGGTCATGAA										
	(1)	-----										
Section 49												
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(4657)	4657	4670	4680	4690	4700	4710	4720	4730	4740		4753
	(4657)	CGGCATCGCCGTGCTGCCGGTGTCCGGCA-----CGCTGGTCAGCCGGAACCGGG-C-GCTGCAGCCGTACTCGGGATGACCGGTTACAACGGCAT										
	(1)	-----ATTAAAGGTTTATACCTTCACAGGTAACAAACCAACCAACTTTCGATCTCTTGATGATCTGTTCTCTAAACGAACCTTT---A										

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Section 50																
lambda NC_001416.1	(4754)	4754	4760	4770	4780	4790	4800	4810	4820	4830	4840	4850				
SARS-CoV-2 NC_045512.2	(4747)	TATCGCCC	GTCTGCAA	CAGGCTGC	CAGCGATCCGA	TG----	GTGGA	CGGCATTC	TGCTCGATAT	-----	GGACACG	CCCGGGGATG	GTGGCGG			
	(80)	AAATCTGT	GTGGCTGT	CACCTCGC	TGCATGCTTAG	TGCACT	-CACG	CAGTAT	AACTAATA	ACTAATTACT	GTCGTTGA	CAGGACACG	--AGTTAACTC			
Section 51																
lambda NC_001416.1	(4851)	4851	4860	4870	4880	4890	4900	4910	4920	4930		4947				
SARS-CoV-2 NC_045512.2	(4833)	GGGCATTTGA	CTGCGCTGACAT	T--CAT	CGCCCGTGTG	CGTGACAT	TAAAC	CGGTATGGGCGCTTGC	CAAC	CGACATGAAC	TGCAGTGC	CAGGT	CAGTTG			
	(174)	GTCTAT	-----	CTTCTG	CAGGC	TGCTTA	CGGTTTC	GTCCGTG	-T-TGCAGC	---CGATCATC	-AGCA	CATCTAGG	----TTTCTG	CTCGGT	---GTG	
Section 52																
lambda NC_001416.1	(4948)	4948	4960	4970	4980	4990	5000	5010	5020	5030		5044				
SARS-CoV-2 NC_045512.2	(4928)	CTTGCCAGTGCC	GCCTCCCGGC	GTCTGGTCA	CGG-AG	ACCGCC	CGGAC	CAGGCTCAT	CGGCGTCA	TGATGGC	-----	TCACAGTAAT	TTACG	GTGCTG		
	(253)	ACCGAAAGGTAA	GA-TGGAG	-AGCCT--	TGTCCGTG	TTTCAA	CG-AG	-AAAA	CACACGT	CAAC	TAGTTTGC	CTGT	TTTTAC	AGGTT	CGCGACGTG	
Section 53																
lambda NC_001416.1	(5045)	5045	5050	5060	5070	5080	5090	5100	5110	5120	5130	5141				
SARS-CoV-2 NC_045512.2	(5019)	CGC---TGGA	GAAACA	GGGTGG	TGGAAATCA	CGCTGAT	TT-A	CAGCGGCA	GCCAT	AAAGG	-TGGATG	GCAAC	CCCTAC	AGCCATCT	TCCGGATG	---AC
	(344)	CTCGTAC	GTGCTTTG	GAGACT	TCCGT-GG	AGGAG	GTC	TTAT	CAGAGGCA	CGT-C	AA	CATCTT	AAAGAT	GGCACT	TGTGGCTTAG	TAGAAGTTGAA
Section 54																
lambda NC_001416.1	(5142)	5142	5150	5160	5170	5180	5190	5200	5210	5220		5238				
SARS-CoV-2 NC_045512.2	(5108)	G-TCCGGGA	GACACATG	CAGTCC	GGATGGA	CGCA---	ACCGCCA	GAT-GTT	TGCGCAG	AAGGTGT	CGGCATAT	TACCGCC	TGTCCGT	GCAGGT	TGT	
	(439)	AGGCGTTTT	GCCTCAA	CTTGAA	CAGCCCTAT	GTGTTCA	ATC-AAAC	GTTCGGAT	TGCTGAA	ACTGCAC	CTCATGG	TCATGTTA	TGGTTG	AGCTGGT	AG-	
Section 55																
lambda NC_001416.1	(5239)	5239	5250	5260	5270	5280	5290	5300	5310	5320		5335				
SARS-CoV-2 NC_045512.2	(5200)	GCTGGATAC	CGAGGCTGCAGT	GTACAGCG	GTGAGG	CCATTGA	TGCCGGA	CTGGCTGA	TGAAC	TGTTAACAG	CACCGATG	CGATC	ACCGT	CATG		
	(534)	-CAGAACT-	CGAAGGCATTCA	GTACGGTC	GTAGTGGT	GAGACACT	TGGTGTCT	CTGTG	TCCCTCAT	GT-----	GGGCGA	A--A	AT--A	CCAG		
Section 56																
lambda NC_001416.1	(5336)	5336	5350	5360	5370	5380	5390	5400	5410	5420		5432				
SARS-CoV-2 NC_045512.2	(5297)	CTGATGCAC	TGGATGCAC	GTAATCC	CGTCTCT	CAGGAGGG	C--G-AA	TGACCAA	A----	GAGACTCA	ATCAACAA	C-TGTT	TCAGCC	AC----	TG	
	(612)	TG----	GC--TT	TACCGCA	AGGTTCTTC	--TTCG	TAAAGAC	GGTAATA	AA-----	GGAGCTGT	GTGGCAT	AGTTAC	GGCGCCGATC	TAA-A	-GTCAT	



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		Section 57										
		(5433)	5433	5440	5450	5460	5470	5480	5490	5500	5510	5529
lambda NC_001416.1	(5382)	CTT	CGC	AGGC	TG	ACG	TTAC	TGA	CGT	GTG	CC	AGCGACG
SARS-CoV-2 NC_045512.2	(694)	TGA	CTT	AGGC	G	ACG	AGCT	TGG	CACT	GAT	CC	TTATGAA
		Section 58										
		(5530)	5530	5540	5550	5560	5570	5580	5590	5600	5610	5626
lambda NC_001416.1	(5479)	TGCG	GCAGAA	A	---	ACA	GC	CGC	ATT	TG	GG	AT
SARS-CoV-2 NC_045512.2	(787)	GCGT	GAGCTT	AACGG	AGG	GG	CAT	ACAC	TG	CT	AT	G
		Section 59										
		(5627)	5627	5640	5650	5660	5670	5680	5690	5700	5710	5723
lambda NC_001416.1	(5572)	TAT	G	A	---	C	CGT	G	AAA	ACG	GCC	CGC
SARS-CoV-2 NC_045512.2	(875)	CT	T	CTAGCA	CGTG	CTGGTAAAG	TT	CAT	GCA	CT	TTGTCCGAACA	ACTGGACTTT
		Section 60										
		(5724)	5724	5730	5740	5750	5760	5770	5780	5790	5800	5820
lambda NC_001416.1	(5657)	ATGC	AGGG	GGC	ACCGG	CA	---	---	CGCTG	G	CTGCAG	G
SARS-CoV-2 NC_045512.2	(972)	ATGA	AATT	G	CTTGTA	CA	CGGAA	CGTTCT	G	AAAAGAG	--	CTAT
		Section 61										
		(5821)	5821	5830	5840	5850	5860	5870	5880	5890	5900	5917
lambda NC_001416.1	(5747)	ATGAC	GAGC	AAA	GAAACCT	TT	ACCC	AT	TACCAGC	-	GG	CAGGGCAA
SARS-CoV-2 NC_045512.2	(1064)	AATGG	G	--	G	AAT	GTCCAAA	TT	TTGTAT	-----	TT	CC
		Section 62										
		(5918)	5918	5930	5940	5950	5960	5970	5980	5990	6000	6014
lambda NC_001416.1	(5841)	CGCC	TGCAATG	ACCCCG	CT	GAT	GCTGGACACC	TCCAG	CC	G	TAAG	CTGGTTGC
SARS-CoV-2 NC_045512.2	(1149)	GCTT	TATGGGT	AGAATT	C	GAT	---	CTGTCTA	TCCAG	TTG	CGT	-
		Section 63										
		(6015)	6015	6020	6030	6040	6050	6060	6070	6080	6090	6111
lambda NC_001416.1	(5936)	GT	TGCTGC	TG	ACCA	GACC	AGCA	C	CAC	GC	T	GACG
SARS-CoV-2 NC_045512.2	(1233)	GT	GATCAT	TG	TGGT	G	-	AA	CTT	CATG	GA	GACG

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		Section 64															
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(6112)	6112	6120	6130	6140	6150	6160	6170	6180	6190	6208						
	(6029)	GAGACGAAAAAACGGACCGCGTTTGGCCGGAACGCGCAATCAGCATCGTTTAACCTTACCCTTCATCACTAAAGGCCGCCGTGTGCGGCCTTTTTTTACGG															
	(1326)	CCACTACTTGTGGTTACTTA---CCCAAAATGCTGTTGTTAAAATTTA-T--T-GTCAGCATG-----TCACAAATTCAGAAGTAGGACCTGAG															
		Section 65															
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(6209)	6209	6220	6230	6240	6250	6260	6270	6280	6290	6305						
	(6126)	GATTTTTTTA---TGTGATGTACACAACCGCCAA-CTGC---TGGCGGCAATGAGCAGAAATTTAAGTTTGATCCGCTGTTTTCT---GCGT															
	(1409)	CATAGTCTTGCCGAATACCAT---AATGAATCTGCGTTGAAAACCATTCCTTCGTAAAG-GGTGGTCGCACTATT---GCCCTTGAGGGCTGTGTGT															
		Section 66															
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(6306)	6306	6320	6330	6340	6350	6360	6370	6380	6390	6402						
	(6210)	CTCTTTT-----TCCGTGAGAGCTATCCCTTCACCACGGAGAA-----AGTCTATCTCT--CAAAATTCCGGGACTGTTAAACATGGCGCT															
	(1498)	CTCTTTATGTTGGTTGCCATAACAAGTGTGCTTATTGGGTTCCACGTGCTAGCGCTAACATAGGTTGTAAACCATACAGGTGTGTTGGAGAGGTTCC															
		Section 67															
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(6403)	6403	6410	6420	6430	6440	6450	6460	6470	6480	6499						
	(6290)	GTACGTTCGCCGATT--GTTTCCGGTGAGGTTATCCG-----TTCCTGGTGGCGGCCTCCACTCT-GAATTTACGCCGGGATATGTCAGAG--CCG															
	(1595)	GAAGGTCTTAATGACAACCTTCTTGAATAACTCCAAGAGAGAAAGTCAAC--ATCAATATTGTTGGTGACTTTTAACTTAATGAGAGATCGCCA															
		Section 68															
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(6500)	6500	6510	6520	6530	6540	6550	6560	6570	6580	6596						
	(6375)	AAGCATGAAGTGAAATCCGCAGATGACCTGCGT-CGCTTGGCGATGAGATCCGCAGAACTCTGGCGGACCCGGCTTACCGC-CGCCGTGCGCATCAT															
	(1689)	TTATTTTGGGCATCTTTT-TCTGCTTCC--ACAAGTGGCTTTTGTGAAACTGTGAAAGGT-TTGGATTATAAAG-CATTCAA-A--CAAATTGTTGAA															
		Section 69															
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(6597)	6597	6610	6620	6630	6640	6650	6660	6670	6680	6693						
	(6470)	CATGCAGAACATGCGTGACGAAGAGCTGGCCA--TGCTCAGGTCTGAAGAAGATGTCAGGAGTTTCTGCCGTGCTTAAGGGCAAAATACACCATGACCG															
	(1778)	TCCTGTGGTAATTTTAAAGTTACAAAAAGGAAAGCTTAAAAAGGTGCTGGAATATTGGTGAACA-GAAATCAATACTGAGTCCTCTTTATGCAATT															
		Section 70															
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(6694)	6694	6700	6710	6720	6730	6740	6750	6760	6770	6780	6790					
	(6565)	GTGAAGCCTTCGATCCGGTTGAGGTGGATATGGGCCTGAGTGAAGGAGAATACATC-ACGCAATCCCGGCGGACCGGAGTGGAGCAAGCGTGACCAAGT															
	(1874)	GCATCAGAGGCTGCTCGTGTGTGTACGATCAATTTTCTCCGCACT-CTTGA--AACTGCTCAA-AATTCTGTGCGTGTTTTA--C-AGAAAGGCGCT															

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		Section 71																	
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(6791)	6791	6800	6810	6820	6830	6840	6850	6860	6870	6887								
	(6661)	CCAC--GTATGACCCGACCGACGATATCGAAGCCTACGCGCTGAACGCACGCGGTGGTGA--TATCATCGTGTTCGATCCGAAAGGCTGGGC	(1964)	ATACAACTAGATGGAATTTCAAGT---ATTCA---CTGAGACTCATTGATGCTATGTGTAC-ATCTGATTTGGCTACTACCAATCTAGT															
		Section 72																	
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(6888)	6888	6900	6910	6920	6930	6940	6950	6960	6970	6984								
	(6754)	TGTTCCTTCTTCAAAGCCGTCAAGGAGAAGCTGGATACCGTCTGTGGCTCTAATTCCGAGCTGGAGACAGCGGTGAAAGACCTGGGC	(2053)	TGTAATGGCTACATTACAGGTGGTGTTCAGTTGACTTCG-CA---GTGGCTAACTAACATCTTTGG-CA-----CTGTTTATGAAAACT--T															
		Section 73																	
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(6985)	6985	6990	7000	7010	7020	7030	7040	7050	7060	7070	7081							
	(6851)	GTCCTATAAGGGGATGTATGGCGATGTGGCCATCGT---CGTGTAATTCGGA--CAGTACGTGGAAAACGGCGTCAAAAAGAACTTTCCT-GC--GG	(2137)	CAAACCCGTCCTTGATTGGCTTGAAG---AGAGTTAAAGGAAGGTGTAGAGTTTCTTAGAGACGGTTGGAAATTGTTAAATTATCTCAACCTGT															
		Section 74																	
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(7082)	7082	7090	7100	7110	7120	7130	7140	7150	7160	7178								
	(6940)	ACAACACGATGGTGTCTGGGA---C---ACTCAGGC-ACGCGGTCTGGCACC-CATATGGCTGCATTTC---AGGATGCGGACGCACAGCGCGAAG	(2231)	GCTTGTAATTGTCTGTTGGACAAATTGTCACTGTGCAAAGGAAATTAAGGAGAGTGTTCAGACATTCTTTAAGCTTGTAATAATAATTTTGTGCTT															
		Section 75																	
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(7179)	7179	7190	7200	7210	7220	7230	7240	7250	7260	7275								
	(7024)	GCACTTAACGCTCTCTGCCCGTTACCCGAAAACTGGGTGACCAACGGCGATCCGGCGCGTGAATTCAACCATGATTCAGTCAGCACCGCTGATGCTGCT	(2328)	TG-TGTG--CTGACTCTATCATTATTGGTGGAGCTAAACTTAAGGCT---TGAAATTTAGGTGAACCATTTGTCAACGCACTCAAAGGGATGTGTACA															
		Section 76																	
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(7276)	7276	7290	7300	7310	7320	7330	7340	7350	7360	7372								
	(7121)	GGCTGACCCTGATGAGTTTCGTGTCGTACAACTGGCGTAATCATGGCCCTTCG---GGGCATTGTTTCTCTGTGGAGGAGTCATGACGAAAAT	(2418)	GAAAGTGT-GTTAAATC-----CAGAGAAAGAA-CT-GGCTACTCATGCTCTAAAAGCCCCAAA---AGAAATTATCTCTTTAGAG---GGGAT															
		Section 77																	
lambda NC_001416.1 SARS-CoV-2 NC_045512.2	(7373)	7373	7380	7390	7400	7410	7420	7430	7440	7450	7469								
	(7214)	GAACTGATTTGCCGTCTCCGCTC---GCTG--GGTGAAACAACTGAACCGGTGATGTACAGCTTGACGGGACGAAAGAGAAGCTGGCGCTCCGTGTGGC	(2499)	AAACACTTCCACAGAAGTTTAAACAGAGGAAGTTGTCTTTGAAAACCTGGTGTATTTACAAACATTAG--AACAACTACTAGTGAACTGTTGAAGCT															

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												Section 78					
	(7470)	7470	7480	7490	7500	7510	7520	7530	7540	7550	7566						
lambda NC_001416.1	(7306)	AGAGCTGAAA	GAGGAGCTT	GATG-ACACGGAT	GAAACTGCCGGTCA	GGA	CACCCCTCTCAG	CCGG	GAAAA	TGTGCTGAC	CGGACA	TGAAAA	TGAGGT				
SARS-CoV-2 NC_045512.2	(2594)	CCATTGCTTG	GTA-CACCA	GTTTGTATTAAACG	GCTTA----	TGTTGCT	GAAATCAAAGA	CACA	GAAAA	-GTACTGTG	CCT--	TGACCTA	TATAT				
												Section 79					
	(7567)	7567	7580	7590	7600	7610	7620	7630	7640	7650	7663						
lambda NC_001416.1	(7402)	GGGATCAGCG	CAGC	CGGATAC	CGTGAT-TCT	GATACGT	CTGAAC	TGGTCA	CGGT	CGTG	GCCAC	TGGTGA	AGCTG	CATACT	GATGC	CACTTCAC--	GCC
SARS-CoV-2 NC_045512.2	(2683)	GATGGTA--A	CAAA	CAATAC	CTTCACAC	TCAAAGGCG	GTGC-AC	CAACAA	AGGT	TACT	TTTGG	TGATGA	CAC-TGTG	ATA	GAG	-TGCAAGGTTA	CA
												Section 80					
	(7664)	7664	7670	7680	7690	7700	7710	7720	7730	7740	7750	7760					
lambda NC_001416.1	(7496)	ACGCGGGATGA	ACCTGT	TGGCA	TTTGTGCTG	CCG--G	GAACGG	CGTTTCGTG	TCTCTG	-CCGGTG	TGGCAGC	CGAAATGACA	-GAGCG	CGGCC	-TGGC		
SARS-CoV-2 NC_045512.2	(2775)	AGAGTGTGAAT	ATCAC	TT--TT	GAACTTGAT	GAAAG	GATTGATAA	AGTACT	TAA	TGAGAAG--	TGCTCTGCT	ATACAGTT	GAACT	CGGTACAG	GAA		
												Section 81					
	(7761)	7761	7770	7780	7790	7800	7810	7820	7830	7840	7857						
lambda NC_001416.1	(7588)	CAGAAATGCAAT	TAA	CGGGAGGCGC	TGTGCTGAT	TTTGATAC	CCCTGTT	CGATGCTG	CCAT	TGCG	CGCCG	ATGAAACG	ATACG	CGGGTACAT	TGGGAA		
SARS-CoV-2 NC_045512.2	(2867)	GTA	AATGAGT	TCGC-CTG--	TGTTGT	GCAGAT	GTGTCA	TAAAAA	CTT	TGCA	AA	CCAGTATCT	GATTACT--	TACACCA	-CTGGGCAT	TGAT-T	
												Section 82					
	(7858)	7858	7870	7880	7890	7900	7910	7920	7930	7940	7954						
lambda NC_001416.1	(7685)	CGTCAGCCACC--	ATACAT	CCGGTGAG	CAGTCAGG	TGCGGT	GATACG	TGGTGTT	TTT	GATGACC	CTGAAA	ATATCAGCT	TATG	CCGGAC	AGGGCGTG		
SARS-CoV-2 NC_045512.2	(2955)	TAGAT	GAGTGGAGTA	TGGCTA	CATACTA	CTTATT--	TGATGAG---	TC	TGGTGAG	TTTAA	ATTGG	CTTCA	ATATGTAT	TGTTCTTTCT	A	CCC-TCC	
												Section 83					
	(7955)	7955	7960	7970	7980	7990	8000	8010	8020	8030	8040	8051					
lambda NC_001416.1	(7780)	CCCGTTGAAG	GCTCC	AGCCC	GTCCC	TGT	TTGTCC	GACTGAT	GAGG	TGCGG	CAGCTG	CGGCGTGGAGAC	ACGCTGA-CC	ATCG	GTGAGGA	AAAT	TTC
SARS-CoV-2 NC_045512.2	(3046)	AGATGAGGAT	GAAGA	AGAAG	GTGAT	TGT	GAAGAA	GAA---	GAGTT-TG	AGCCAT	CAAC	TCAATATGAGTAT	GGTACTGA	AGAT	GATTACC	AA	GGTAA
												Section 84					
	(8052)	8052	8060	8070	8080	8090	8100	8110	8120	8130	8148						
lambda NC_001416.1	(7876)	TGGGTAGAT	TCGGGT	TTGCC	GATGATGG	CGGAAG	TGTCATCTC	TGGCTTG	GACGGG	CGTAC	CGCCTGCCGTTA	ACCGTCGCC----	GCTGA	AA			
SARS-CoV-2 NC_045512.2	(3139)	--ACC--TT	TGGAA	TTTGGT	GCCA----	CTTCTGCTG---	CTCTTCAACCT	GAA--GAAG	AGCAAGAAGAAGAT	TGGT	TAGATGATGATAGTC	AA					

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	(8149)	8149	8160	8170	8180	8190	8200	8210	8220	8230	8245																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
lambda NC_001416.1	(7968)	--GGGG	GATG	TATGG	CCAT	AAAAGG	TCTTG	AGCAGG	CCGTT	GAA	AAAC	CT	CAGCCGT	AT	CAG	GCAA	AACG	GC	GGT	G	CCTGG	T	GCCG	CC	G	CAAT	G	CC	AT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
SARS-CoV-2 NC_045512.2	(3221)	CAAAC	GT	TG	GTCAA	CA	AG	ACGGCAG	-	TG	--	AGGACA	ATCA	G	AC	AACT	TA	C	TATTCA	AA	CA	ATTGTT	--	G	AGGT	T	CAACC	T	CAATT	GA	-	GAT	G	GA	A	C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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	(8246)	8246	8260	8270	8280	8290	8300	8310	8320	8330	8342																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
lamhda NC_001416.1	(8063)	T	A	A	C	G	C	G	T	T	G	C	T	T	C	A	T	C	G	C	G	A	T	A	T	C	G	C	G	A	T	A	A	G	G	G	C	A	G	C	T	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
SARS-CoV-2 NC_045512.2	(3312)	T	T	A	C	A	C	A	G	T	T	G	T	T	C	A	G	A	C	T	A	T	T	G	A	A	A	C	T	T	A	C	T	A	A	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G	A	A	A	T	G

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													Section 92									
	(8828)	8828	8840	8850	8860	8870	8880	8890	8900	8910	8924											
lambda NC_001416.1	(8641)	TTTTG	ATG	AGCG	GATTTTCCGGC	AGTTGCC	GT	TTATCTCA	CCG	CGCTGAA	TACA	CGGGCGAAGAGCTG	GACAGCG	ATAC	CTGGCAGGCGGAGCT							
SARS-CoV-2 NC_045512.2	(3850)	TGAAA	AGC	AGTT	GAACA	--AAAG	ATCGCTGA	GATT	CCTAA	---	GAGGAAGT	TAGC	--CATTTATAACT	GAAAGTA	AACCTTCAGTTGAACAGA							
													Section 93									
	(8925)	8925	8930	8940	8950	8960	8970	8980	8990	9000	9010	9021										
lamhda NC_001416.1	(8737)	G	CAT	ATCGA	AGT	T	--TTCC	TGCTGCTCA	GGTGCCG	GATT	CAGAGCT	G	GATGCGTGG	ATGG	AGTC	CCGG	--ATTTAT	TCCGGT	GATG	AGC	GATATC	
SARS-CoV-2 NC_045512.2	(3939)	G	AAA	CAAG	ATGA	T	AAGAAAA	TCAAAGCTT	GTGTTGAAGA	-----	AGTT	--ACA	--AC	--AACT	CTGG	AAGAAAC	T	AAGT	TCC	TACA	GAAAC	
													Section 94									
	(9022)	9022	9030	9040	9050	9060	9070	9080	9090	9100	9118											
lambda NC_001416.1	(8828)	CC	GGC	ACT	GT	C	AGATT	TGAT	CACCA	GTAT	GGTGGCCAGCGGCTAT	G	ACT	ACCGGCGCGAC	GAT	GATG	CGGGCTTGTGGAGT	T	CAGCCGA	TCTG	ACT	
SARS-CoV-2 NC_045512.2	(4022)	TT	GTT	ACT	TT	-	ATATT	GACATT	AATG	GCAA	-T-----	CTTCATCCA	GATT	CTGCCACTCTT	GT	TAG	TGACATTGA	----	CA	TCACTTTC	TTAAA	--
													Section 95									
	(9119)	9119	9130	9140	9150	9160	9170	9180	9190	9200	9215											
lamhda NC_001416.1	(8924)	TATGTC	AT	TAC	CTAT	GAA	ATGT	-GAG	GACGC	TATGC	CTGT	ATCCAAAT	TCCTACAATGCCGG	TGAAAG	GTGCC	GGGACC	ACC	CTGTGGGT	TTAT	AAGGG		
SARS-CoV-2 NC_045512.2	(4105)	-GAAAG	AT	GCT	CCAT	-AT	ATAGT	GG	TGATG	TGTT	CAAG	AGGGTGT	TTT-----	TAACT	-GCTGT	GGT	TAT	ACCTAC	----	TAAA	AAGGC	
													Section 96									
	(9216)	9216	9230	9240	9250	9260	9270	9280	9290	9300	9312											
lambda NC_001416.1	(9020)	G	AGC	GGTGACC	CTT	ACGC	GAATC	CGC	-TTTCAGAC	GTG	ACTG	GTCG	CGT	CTGG	CAAAAGT	TAAAGAC	CT	--GAC	CGCCCGGC	GAAC	TG	ACCGCTGAG
SARS-CoV-2 NC_045512.2	(4183)	TG	GTGG	CACTA	CTG	AAAT	GCTAG	CGAAAGCTTTGAG	AAAA	AGTG	---	CAACAG	CAAA	TTAT	TATAA	CCA	CTTACC	CGGGTCAG	GGTT	TAAAT	GTTA	C
													Section 97									
	(9313)	9313	9320	9330	9340	9350	9360	9370	9380	9390	9409											
lambda NC_001416.1	(9114)	T	C	TAT	GAC	GACAG	CTAT	CTCGAT	TGAT	GAA	GATGCA	ACTGGACTG	C	GACCGGGCAGGGG	CA	GAAATC	TGC	CGGAG	ATACCAGCTTC	ACGCTGG	CGT	
SARS-CoV-2 NC_045512.2	(4277)	A	CTGTA	GAG	GAGG	-CAA	AAGACAG	TGCT	T	AAAA	-AGT	G	TAAAAGTGC	CTTTTACATTCTAC	CA	-TCTAT	TATCTCT	-AATGAGAAGCA	AGAAATT	CT		
													Section 98									
	(9410)	9410	9420	9430	9440	9450	9460	9470	9480	9490	9506											
lamhda NC_001416.1	(9211)	GGA	TGCCCCGAGAGCAGG	GGCAGCA	GGCGCT	TGCT	GCGTGGTT	T	AATGA	AGGC	GATAC	-CCGTGC	CTAT	--AAAAT	CCGCT	TCCCGAACGGC	ACGGT					
SARS-CoV-2 NC_045512.2	(4370)	GGA	ACT	-----	GTTTCTT	GG	AAT	TGCG	GAGAAATGCT	TGCAC	ATGC	AGAA	GAAACACG	CA	AATTAA	TGCTGTC	TGTGTGGAA	-ACTAAA				

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Section 99																			
	(9507)	9507	9520	9530	9540	9550	9560	9570	9580	9590	9603								
lambda NC_001416.1	(9305)	CGATGTGTTCCGTGGC-TGGGTCA	G	CA	AGTATCGGTAAGGCGGTGA	A	CGGCGA	AGG	AA	G--TGATCACCCGCACGGT	TGAAAGT	CACCAATGTGGG	A	CGT					
SARS-CoV-2 NC_045512.2	(4454)	GCCATAGTT-TCAACTATAC-AGC	G	T	AAATATAAGGGTATTAA	A	TACAAG	AGG	GT	GTTG-----TTGAT	T	----AT	TGGTGCT-----	A	GAT				
Section 100																			
	(9604)	9604	9610	9620	9630	9640	9650	9660	9670	9680	9690	9700							
lamhda NC_001416.1	(9399)	CCGT	CGATGG	CAGAAG	ATCGCAG	CACGGTA	ACA	CGGC	CAACCGGCATG	AC	CGTGACGC	CTGC-CAGC	AC	CTCGGTGGTGAAAGGGCAGAGC	AC	CACG			
SARS-CoV-2 NC_045512.2	(4530)	TTTAC	TTT	TACACCAG--TAA	AA	CA	ACTGT	A	GC	TCACTTATCAACAC	AC	TTAACGAT	CT	AAATGAA	ACT-----C-----TTGTT	AC	AATG		
Section 101																			
	(9701)	9701	9710	9720	9730	9740	9750	9760	9770	9780	9797								
lambda NC_001416.1	(9495)	CTGACCGT	GGCCTTCC	AGC	CGGAGGGCGT	AACCGACA	AAGAGCT	TTCTGTG	GGTGTCTG	CGGATAAAAC	AAAAGCCAC	CGTGTCGG	TCAGTGGTATGA						
SARS-CoV-2 NC_045512.2	(4610)	C	CACTT-G	GCTATGTACA	CATG	GCTTAA	ATTTGAA	AGAAGCT	GCTC---GGTATATG	AGATCTCTCA	AAAGTGCCAG	CTACAGTT	TCGTTTCTTCA						
Section 102																			
	(9798)	9798	9810	9820	9830	9840	9850	9860	9870	9880	9894								
lamhda NC_001416.1	(9597)	CCATCAC	CGTGA	ACGGCGTTGCT	GCA	GGCAAGGT	CAACATT	CCGGT	TGTA	TC	CGGTAA	TGGTGAGT	TTTGCTG	CGGTT-GCA	GAAA	TTAC	CGTCACCG		
SARS-CoV-2 NC_045512.2	(4703)	CC	TGATG	CTGTT	AC---AGC--GTATA-	ATGGT	TATCTT	AC	TTCT-TCT	TC---	TAA	AA-CACC	TGAAGAA	CATTTTATT	GAAA	CCATCTCAC---			
Section 103																			
	(9895)	9895	9900	9910	9920	9930	9940	9950	9960	9970	9980	9991							
lambda NC_001416.1	(9688)	CCAG	TTAA	TCCGGAGAGT	CA	GCGATG	TCCT	GAAAACC	GAATCAT	TTG--	AACAT--	AAC	GGTGACCG	TCACG	CTTTCTGA	ACTGT-CAGCCCT			
SARS-CoV-2 NC_045512.2	(4785)	----	TTGC	TGGTTCCTA	TAA	AGAT	TGGTCCT	-ATTCTG	GACAACT	TACAC	AAC	TAGGT	ATAGA	---ATTTC	TTAAGAGAGG	TGATA	AAAAGTGTATAT		
Section 104																			
	(9992)	9992	10000	10010	10020	10030	10040	10050	10060	10070	10088								
lambda NC_001416.1	(9779)	GCAG	CGCAT	TGAGCAT	CTCG	CCGTGATG	AAACG	CA	GGCAG	AACAGG	CGGAG	T	CAGAC	AGCA	ACC	GGAAGTT	TACTGTGGA	AGACGCCATCA	GAACC
SARS-CoV-2 NC_045512.2	(4874)	TACA	CTAG---	TAATC	CTAC	CA	CATTCC	ACCTAG	ATGG	TGAAGTTAT	CACCT	TTGACA	ATCT	TAA	GAC	ACTTCTT	CTTTGAGA	GAAGTGAG	GACTA
Section 105																			
	(10089)	10089	10100	10110	10120	10130	10140	10150	10160	10170	10185								
lamhda NC_001416.1	(9876)	GGCGC	GTTTC	TGGTGGCG	ATGTCC	CTGTGGC	ATA	ACCAT	CCG	CA	GAAGACGC	AGATG	CCGT	C	CATGA	ATGAAGCCGT	TAAACAG	GATTG	AGCAGGAAG
SARS-CoV-2 NC_045512.2	(4968)	TTA-A	GGTGT	TTA-CAAC	AGTAGA	CA-----	ACATTA	ACCTC	CA	--ACGCA	AGTGTG	GACATGTC	AATG---	ACATA	TAT---	GGACA	A-	CAGTTTG	

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Section 106												
	(10186)	10186	10200	10210	10220	10230	10240	10250	10260	10270	10282	
lambda NC_001416.1	(9973)	TGCTTACACCTGGCCCACGGAGGCAATTTCTCATGCTGAAAACGTGGTGTACCGGCTGTCTGGTATGTATGAGTTTGTGGTGAATAATGCCCTGA										
SARS-CoV-2 NC_045512.2	(5049)	GTCCAACCTTATTTGGGA--TGGAGCTGATGTTACTAAAAATAAAACCTCA-----T-----AATTCACA-TGAAG-GTAAACAATTTATGTTT										
Section 107												
	(10283)	10283	10290	10300	10310	10320	10330	10340	10350	10360	10379	
lambda NC_001416.1	(10070)	ACAGACAGAGGACGCCGGGCCTGCAGAGCCTGTTTCTGGGGAAAGTGTTTCGACGGTGAAGCTGAGTTTGGCCCTGAAACTGGCGCGT										
SARS-CoV-2 NC_045512.2	(5127)	TACCTAAT---GATGACACTCTACGT-----GTTGAGGCTTTT-GAGTACTACACACAACCTGATCCTAGTTTTCT--TGG-----GTAGGTACAT										
Section 108												
	(10380)	10380	10390	10400	10410	10420	10430	10440	10450	10460	10476	
lambda NC_001416.1	(10167)	GACCCGACTGGCGTGCCATGCTTGCCGGGATGTGATGCACGGAGTATGCCGACTGGCACCCTTTTACAGTACCATTATTTCATGATGTT-TCTGC										
SARS-CoV-2 NC_045512.2	(5206)	GTCAAGCATTAATCACTATAAAAGTGGAAATAG-CGACAAGTTAATGGTTTAACTT-----CTATTAAATGGGCAGA--TAACAACGTGTATCTT										
Section 109												
	(10477)	10477	10490	10500	10510	10520	10530	10540	10550	10560	10573	
lambda NC_001416.1	(10263)	TGGATATGCACTTTTCCGGGCTGACGT-ACACCGTGCTCAGCCTGTTTTTCAGCGATCCGGATATGCATCCGCTGGATTTCAGTCTGCTGAACCGGC										
SARS-CoV-2 NC_045512.2	(5294)	GCCACTGCATTGTT-----AACACTCCAACAAATAGAGTTGAAGT-----TTAATCACCCTGC-----TCTACAAGA-TG-----C										
Section 110												
	(10574)	10574	10580	10590	10600	10610	10620	10630	10640	10650	10660	10670
lambda NC_001416.1	(10359)	GCGAGGCTGACGAAGAAGCTGAAGATGATGTGCTGATGCAGAAAGCGGCAGGGCTTGCCGAGGTGTCCGCTTTGGCCCGGACGGGAATGAAGTTAT										
SARS-CoV-2 NC_045512.2	(5359)	TTATTACAGAGCAAGGCTGTGTAAGCTGC--TAACTTTTGTGCACTTAT-CTTAGCCTA-CTGTAAATAAGACA GTAGGTGA-GTTAGGTGAT-GTT										
Section 111												
	(10671)	10671	10680	10690	10700	10710	10720	10730	10740	10750	10767	
lambda NC_001416.1	(10456)	CCCCGCTTCCCCG GATGTGGCGGACATGACCGAGGATGACGTAATGCTGATGACAGTATCAGAAGGGATCGCAGGAGGAGTCCGGTATGGCTGAACC										
SARS-CoV-2 NC_045512.2	(5450)	AGAGAAACAATGAGTACTTGT---TCAACATGCCAATTTAGATCTTGCA-----AAGAGTC---TTGAACGTGGTGTGTAAAACTTGTGGA										
Section 112												
	(10768)	10768	10780	10790	10800	10810	10820	10830	10840	10850	10864	
lambda NC_001416.1	(10553)	GGTAGGCGATCTGGTCGTTG-ATTTGAGTCTGATGCGGCCAGATTGTACGAGC-AGATGGCCAGAGTCAGGCGTCATTTTTCTGGTACGGAAGAGTG										
SARS-CoV-2 NC_045512.2	(5534)	CAACA GCGA----CAACCCTTAAGGTGTAGAAAGCTGTT---A-TGTACATGGGCACACTTCTTATGAACAAATTTAAGAAA-GGTGTTCAATAC										



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												Section 113																							
	(10865)	10865	10870	10880	10890	10900	10910	10920	10930	10940	10950	10961																							
lambda NC_001416.1	(10648)	ATGC	GAAAAAACA	GCGGC	AGTC	GT	TGAAC	AGT	TCG	CT	GAGC	CGACAGG	CG	CTGG	CT	G---	CACA	GAAAG	CGGGG	ATTT	CC	GT	CGGG	CAGTAT	AA	GC									
SARS-CoV-2 NC_045512.2	(5622)	C-TT	GTA	CGTG--T	GGTAA	ACAA	GCT	TAC	AAA	A	TAT	CT	AGTA	CAACAGG	AG	TCAC	CT	TTT	GTTAT	GAT	TGT	CAG	CACCAC	CT	G---	T	CAGTAT	GAA	CT						
												Section 114																							
	(10962)	10962	10970	10980	10990	11000	11010	11020	11030	11040	11058																								
lambda NC_001416.1	(10742)	CGCCATGCGT	ATGCT	TGCT	TGC	AC	AGTT	CACCGACGTG	GG	CA-C	G	CAGCT-T	G	CAGGC	GGGC	A	AAGT	CCGTG	G	CT	TG	ATCCT	GCTG	CA	ACAGGGGGGGC										
SARS-CoV-2 NC_045512.2	(5713)	TAAG-----	C	ATGG	TAC	AT	TTT	AC	-----	TTGT	GG	CA	AGT	G	AGTAC	ACTGGT--	AATT	A	CCAG--	TGT	GGT	CA	CT-ATAAA	CA	TATAACTTCTA										
												Section 115																							
	(11059)	11059	11070	11080	11090	11100	11110	11120	11130	11140	11155																								
lambda NC_001416.1	(10837)	AGGTGA	AAGGAC	TCC	TT	CGGC	G	GGATGATCCCCAT	G	TTC	CAGGG	GG	CTT	G	CCGGT	TG	CG	ATCAC	CCT	G	CCGATG	T	TGG	G---	GGCCAC	-----	CT	GC	T	G					
SARS-CoV-2 NC_045512.2	(5790)	AAGAA	ACTTTG	TAT	TG	CATA	G	ACGGT	GCTTTAC	T	T--	ACAA	AGT	CT	C	AGAA	TAC	AA	AGGT	CCT	A	TT--	AC	G	GAT	G	TTTTCTACAAAGAAAA	CAG	T	T					
												Section 116																							
	(11156)	11156	11170	11180	11190	11200	11210	11220	11230	11240	11252																								
lambda NC_001416.1	(10926)	G	CGGTGGCGA	C	CGGTGCG	CT	G	GCGTA	T	GCC	T	GGT	AT	CAG	G	GCAACTCA	ACCCTGTCCGATTTC	A	ACAAAAC	G	CTGGTCC	TTT	CCGGC	A	ATCAGGCGG										
SARS-CoV-2 NC_045512.2	(5883)	AC	ACAACAAC	C	ATAAAAC	C	AGT-TAC	T-TA	TAA-	AT	TG	G	-----	T	ATGGT	GTG	-----	A	TGGTGTG	-----	TTT	GT---	A	-----											
												Section 117																							
	(11253)	11253	11260	11270	11280	11290	11300	11310	11320	11330	11349																								
lambda NC_001416.1	(11023)	G	ACTG	ACG-G	C	AGATCGTAT	G	CTGG	TCCTGTCCAG	A	GCCGGGC	A	GGCGGC	A	GGGC	T	GACGTTT	A-	AC	CAGA	C	CAGC	G	AGTCAC	T	CAGCGCA	C	TGGTT	T						
SARS-CoV-2 NC_045512.2	(5934)	C	AGAA	ATTGA	C	CCTA----	AGT	TGG	A---C-AATT	A	TTATAAG	A	AAGACA	A	TTCT	T	ATTTAC	AG	AG	CAAC	CAATT	G	ATCTTG	T	ACCAAAC	C	AACCA	A							
												Section 118																							
	(11350)	11350	11360	11370	11380	11390	11400	11410	11420	11430	11446																								
lambda NC_001416.1	(11118)	A	AGG	C	GGGGTAAGC	G	GTGA	G	GC	T	CAG	TT	-GC	GT	CCA	T	CAGCCA	GA	GTG	T	GG	C	GCG	TTT	CTCCTCTGCA	T	CCGG	C	GTGG	A	GGTGGACAAGG	T	CGCT		
SARS-CoV-2 NC_045512.2	(6023)	T	ATC	C--	AAACGCAAG	C	TTC	GA--TA	AAT	TT	TAA	GT	TTG	T--	ATGT	G	ATAA	TAT	C	AAA	TTT	G	CTGATGATT	TAAAC	C	AGTT	A	AC---	TGGTTA	T	AAGA				
												Section 119																							
	(11447)	11447	11460	11470	11480	11490	11500	11510	11520	11530	11543																								
lambda NC_001416.1	(11214)	G	A	G	CCT	T	CGGG	AAG	CTGA	C	CAC	A	G	A	CCCGACG	T	CGGG	CTGAC	GGCG	ATGG	CTCGCA	G	T	T	CCA	TAAC	G	TG	T	CGGCGG	AGC	A	GATTGCGT	A	TGTTG
SARS-CoV-2 NC_045512.2	(6111)	--	A	ACCT	G	CTTC	AAG	AGAG	C-TT	AA	AGTTACAT	T	TTTCC	CTGAC	TTAA	ATGG	TGATGTG	G-T	GGC	T	ATT	GAT	T	TATAAAC	ACT	AC-----	AC	ACCC							

## SARS-CoV-2 &amp; lambda.apr

												Section 120
	(11544)	11544	11550	11560	11570	11580	11590	11600	11610	11620	11630	11640
lambda NC_001416.1	(11311)	CTCAG	TTGCAG	CGTTCC	GCGG	ATGAAGCCGGGGC	ATTG	CAGGCGGC	GAAC	GAGGCCGC	AACG	AAAG
SARS-CoV-2 NC_045512.2	(6197)	T--CT	TTTAAG	AAAGGA	GCTA	AATT--GTTACAT	AAAC	C---TATT	GTTT	GGCATGTT	AACAA	T--GC--AAC
												Section 121
	(11641)	11641	11650	11660	11670	11680	11690	11700	11710	11720		11737
lambda NC_001416.1	(11406)	GAGAA	CATGGGC	ACGCTGGAG	-----ACC	TGGGCAGA	CAGG	-ACTG	CGCG	GGCATTCA	AATC	CATGTGGG
SARS-CoV-2 NC_045512.2	(6274)	TAAAC	CAAT--	AC-CTGGT	G	TATACGTTGTCTT	TGG	AGCA-	CAAAAC	CAG	T-TGAA-----	ACATCAAA
												Section 122
	(11738)	11738	11750	11760	11770	11780	11790	11800	11810	11820		11834
lambda NC_001416.1	(11491)	GTCCT	GATAC	CGCGCAGG	---A	GATGCTGAT	TAAAG	GCAGAG	-GCT	GCGTAT	AAGAAAGC	AGACGAC
SARS-CoV-2 NC_045512.2	(6354)	C---A	GAGGA	CGCGCAGG	GAATG	GATAATCT	TGCCT	GCGAAGAT	CT	AAAACC	AGTCTCTGA	AAGAAGT
												Section 123
	(11835)	11835	11840	11850	11860	11870	11880	11890	11900	11910	11920	11931
lambda NC_001416.1	(11583)	GTT	AACGATGAAGC	GC	GG	CGCGT	TACTGGGATGATCGTGAAA	AGG	CCCGTC	TGCGC	TGAA	AG
SARS-CoV-2 NC_045512.2	(6441)	AAG	ACGTTCTT---	G	AGT	GTAATGT	TGAAAAC	TACCGAAGTTGT	AGG	AGACAT	TATACT	TAAAC-
												Section 124
	(11932)	11932	11940	11950	11960	11970	11980	11990	12000	12010		12028
lambda NC_001416.1	(11680)	AGG	---ACAAAAATGCGCAGC	AG	CAG	AGC	GATAC	GAA	GCGTC	AC	GGCT	GAAATATAC
SARS-CoV-2 NC_045512.2	(6531)	AGG	TTGG-----	CCACACAG	AT	CT-	AAT	GCTG	CTTA	TGTAG	AC	AAT
												Section 125
	(12029)	12029	12040	12050	12060	12070	12080	12090	12100	12110		12125
lambda NC_001416.1	(11774)	GCTGGAGAAATAT	ACCGC	CC	GTCAGGAAGAACT	GAA	CA	GGCA	-CTGAAA	-GACGGG	AAAAATCCTGCAGG	CGGATTAC
SARS-CoV-2 NC_045512.2	(6587)	-----A	AGAAA	CC	TAAT-----	GAA	TTA	TCTA	AG-----	A-----	GTATT	AGGT
												Section 126
	(12126)	12126	12140	12150	12160	12170	12180	12190	12200	12210		12222
lambda NC_001416.1	(11869)	C	GAAAA	AGGATTA	T	GAAGCGA	CGC	-TGAAA	AAAGC	C	GAAACA	GTCCAG
SARS-CoV-2 NC_045512.2	(6621)	T	GAAAA	C---	CC	TGCTACT	C	ATGGTTT	A	GCTG	CTGTTA	TAGTGT

## SARS-CoV-2 &amp; lambda.apr

												Section 127						
	(12223)	12223	12230	12240	12250	12260	12270	12280	12290	12300	12319							
lambda NC_001416.1	(11962)	--CCT	GCTGACGCTTCAGGCAGAA	CTCCGG	ACGCTGGAGA	AGCATGCCGG	AG---	CAAA	TGAGAAAT	TCAGCC	---AGCAGCGCCGGGA	TTTGTGG						
SARS-CoV-2 NC_045512.2	(6692)	AAGCCT	-----	TTTCT	TAACAAGT	TGTTA----	GTACAA	-CTA	CTAA--	CATAGTTACA	CGGT---GTTTAAACCG	TGTTT-G						
												Section 128						
	(12320)	12320	12330	12340	12350	12360	12370	12380	12390	12400	12416							
lambda NC_001416.1	(12051)	AAGGCGGAG	----AGTC	AGTTGCGGTACT	TGGAG--	GAGG	GGCGCAACGT	CGCCAGCTG	TCTGCAC	AGGAGAAAT	CCTGCTGGCGC	ATAAAGAT						
SARS-CoV-2 NC_045512.2	(6760)	TACTAATTATATGC	-CTTAT	TTCTTTTACTTT	TA---TT	GCTAC	CAATTGT-GTAC	CTTT----	TACTAGA	AGTACAAAT	CTAGAA--	TTAAGCATCT						
												Section 129						
	(12417)	12417	12430	12440	12450	12460	12470	12480	12490	12500	12513							
lambda NC_001416.1	(12141)	--GAGACGCTGG	AGT--	ACAAACGC	CAGCTGGCTGCAC	TGGCGAC	AAGGTTAC	GTATCAG	GAGCGCC	TGAACGCGC	TGGCGCAGCAGGCGGAT	TAAA						
SARS-CoV-2 NC_045512.2	(6845)	ATGCCGACTACT	ATAGC	AAGAATACT	GTAAAG-AGTGT	CGGTA-AA	TTTTTGTCTAG-AG	GCTTCATT	T-AA	TTATT	TGAAGTC-ACCTAATT	TTTC						
												Section 130						
	(12514)	12514	12520	12530	12540	12550	12560	12570	12580	12590	12600	12610						
lambda NC_001416.1	(12234)	TTTCG	CACAGCAGCA	ACGGGC	AAAACGGCCGC	CAT	TGATGC	-GAAAAGCCG	GGGGCT	GACTGAC	CGGCAGG	CAGAACGGGA	---GCCACGGAACAG					
SARS-CoV-2 NC_045512.2	(6937)	TAAA	CTG-AT	AAATATTATA	TTTG	TTTTTACTAT	TAAG	TGTTTGCCCT-AGG	TTCT	TTA-AT	CTACTCAA	CCGCTGCTTT	AGGTGTTTTAATGTCT					
												Section 131						
	(12611)	12611	12620	12630	12640	12650	12660	12670	12680	12690	12707							
lambda NC_001416.1	(12327)	CGCC	TGAA---	GGAACAGT	ATGGCGAT	TAATCCGCT	GGCGCT	GAA	TAACGT	TCATGT	CAG-AGC	AGAAAAAGACCT	TGGG--CGGCTGAAGACCA-----					
SARS-CoV-2 NC_045512.2	(7031)	AATT	TAGGCAT	GC---CT	TCTTACTGT	-ACTG	CTTACAGA	GAA	GGCTATT	TGAAC	TCTACTA	TGTC	ACTATGCAACCTA	CTGTACTGGTTCTAT				
												Section 132						
	(12708)	12708	12720	12730	12740	12750	12760	12770	12780	12790	12804							
lambda NC_001416.1	(12413)	---GCT	TCGC---	GGAAC--	TGGATGGC	AGGCT	TGAAGTC	GGC---	TGGAGT	GA	GTGGGAAGAG	AGCGCCACG	-GACAGTATGT	CGCAGG	TAAA			
SARS-CoV-2 NC_045512.2	(7123)	ACCTTG	TAGTGT	TTTGTCTT	TAG	TTT	TAGATTCT	TTAGACAC	CTATCCT	TCTTTA	GAA	AACTA-TACA	AA	TTA----	CCATTT----CATC-TTTT-A			
												Section 133						
	(12805)	12805	12810	12820	12830	12840	12850	12860	12870	12880	12890	12901						
lambda NC_001416.1	(12497)	AA	GTGC	AGCC	ACGCAGAC	CTTTG	ATGGTA	TTGCA	CAG	AAAT	T--GG	CGGCGATGCTGACCGG	CAGT	GAGCAGAAC	TGG--CGC	AGCTT	CAC	CCGTT
SARS-CoV-2 NC_045512.2	(7209)	AA	TGGG	ATTT	A	ACTG--	CTTTTG	GCTTAG	TTGCA	GAG	TGGT	TTTTG	GCATATATTCTTTTCA	CTAG	GTTTTTCTAT	TGTACTT	GGA	TTGGCTGCA---

## SARS-CoV-2 &amp; lambda.apr

												Section 134														
	(12902)	12902	12910	12920	12930	12940	12950	12960	12970	12980	12998															
lambda NC_001416.1	(12589)	CCGTGCTGTCCATGATGA	CAGAA	ATTCTGC	-----	TTA	AGCAGGCA	ATGGTGG	GGATTGT	TCGGAGTATCGGCAGCGCCA	TTGGCGGG	GCTGTT														
SARS-CoV-2 NC_045512.2	(7301)	-ATCATGCAATTGTTT	CAGCT	ATTCTGC	AGTACATT	TTA	TTAGT---	A	ATTCTT	GGCTTATGT	GGTT--	AATAA-----	TTAATCTTGTAC-A													
												Section 135														
	(12999)	12999	13010	13020	13030	13040	13050	13060	13070	13080	13095															
lambda NC_001416.1	(12678)	GGTGGCGG	CGCAT	TCGCG	T	CAGGC	GGTACAGCCA	TTCA	GGCCG	CTGCGGCGAAA	TTCTCA	TTT	TGCAACCGGAGGA	TTTACGGGAACC	GGCGGC	AAAT										
SARS-CoV-2 NC_045512.2	(7384)	AA	TGGCC	CGATT	TCAGCT	---	AT	GGT	TAGAATG	TACA	T---	C-----	TTCT	TTGCAT-----	C--AT	TTTATTATGTAT	GGAA-AGTT									
												Section 136														
	(13096)	13096	13110	13120	13130	13140	13150	13160	13170	13180	13192															
lambda NC_001416.1	(12775)	ATGAGCC	CAGCG	GGGATT	GTTCACCG	TGGT	GAGTT	TGTCT	TAC	GAAAGGAGGC	AAC	CAGCCG	GATTGG	CGTGG	GGAATC	TTTAC	CGGCTGA---	TGC								
SARS-CoV-2 NC_045512.2	(7455)	ATGTGC	ATGTT	G	TAGAC	GGT	TGTAA	TCA	TCAA	-CT	TGTAT	GATGT	TGT-TACA	AAC	GTAATA	GAGCAA	CAAGAG	T	TAC	AACTATTGTTAAT						
												Section 137														
	(13193)	13193	13200	13210	13220	13230	13240	13250	13260	13270	13289															
lambda NC_001416.1	(12868)	GCGGC	TATG	-CCA	CCGGCGG	TATGTC	GTA	CACCG	GGCAG	CATGG	---CAGA	CAGC	CGGT	CGCAGGCGT	---CCGG	GACGT	TTTGA	G	CAGAA	ATAAC						
SARS-CoV-2 NC_045512.2	(7550)	GGTGT	TAGAAGGT	CC	TTTTAT	TGCTAT	G---	CTAAT	GGAGG	TAAAG	GCTTTT	GCAAC	---	TACACAA	T	TGGAATT	GTGT	TAAATT	GTGAT	ACATTC						
												Section 138														
	(13290)	13290	13300	13310	13320	13330	13340	13350	13360	13370	13386															
lambda NC_001416.1	(12958)	ATGTGGT	GATT--	A	CAACGAC	GCA	C	GAA	CG-	GC	AGAT	AGGT	CCGG	CTGCT	CT	G	AAGGCGGT	GTATGAC	ATGGCC	CGCAAG	GGTG	CCCGT	GATGA			
SARS-CoV-2 NC_045512.2	(7640)	TGTGCTG	G	TAGTAC	A	TTTATTA	G	TAT	GAA	GTT	G	CG	AGAG	ACT	T	GTCA	CTA--	CAGTT--	TAAAAGACCA	AT	AAAT	CCT	ACTGA--	CCAGTCTTCT		
												Section 139														
	(13387)	13387	13400	13410	13420	13430	13440	13450	13460	13470	13483															
lambda NC_001416.1	(13052)	AAT	TCA---	GACACAG	ATGC	GTG	ATG	GTG	GCCTG	TCT	CCGGAGGTGGA	C	GATGAAGAC	CTT	CCGC	TGGA	---	AAGTGA	AAAC	CCGGT	ATGGA	TGTG				
SARS-CoV-2 NC_045512.2	(7730)	---	TACATC	G	TTGAT-	AGT-	GT	TACA	GTG	AAGAA	TGGT	-----	TCCAT	C	-ATCTTTA	CTT	TG-AT	TAA	AGCTGGTCAA	AAAGAC	CTT--	ATGAA	AGAC			
												Section 140														
	(13484)	13484	13490	13500	13510	13520	13530	13540	13550	13560	13570	13580														
lambda NC_001416.1	(13142)	GCT	TCGGTC	CCTTC	TG	TAA	GAA	AGGT	GCG	CTTTGG	TGA	TG	GCTA	TT--	CT	CAGCGA	GCG	CT	TGCC	G--	GGC	TGAATG	CC	AACCT	TGAAAACGTAC	AGCG
SARS-CoV-2 NC_045512.2	(7812)	AT	TCTCTCT	CTCAT	TT	TGTTA-	ACT	T	AGAC	AA-CC	TGA	GAGCTA	ATAA	CAC	TAAAG	GTT	CAT--	T	GCCTAT	T	AATG	TT	ATAG	TTTTT	GATGGT	A---

## SARS-CoV-2 &amp; lambda.apr

											Section 141	
	(13581)	13581	13590	13600	13610	13620	13630	13640	13650	13660	13677	
lambda NC_001416.1	(13236)	TGACGCT-----T	TCTGTCCCC	GTGAGGA	GCCACGG	TACTGGAGTC	GT	TTCTGGAAG	AGCA---CGGG	-GGCTG	GAAAT--CCTT	
SARS-CoV-2 NC_045512.2	(7902)	-AATCAAAATGTGAAGAATCA	TCTGCAAAAT	CAGCGTCT	GTTTAC--	TACAGT--	CAGCTT	ATGTGTC	AACCTATACT	GTTACTAG	ATCAGGCATT	
											Section 142	
	(13678)	13678	13690	13700	13710	13720	13730	13740	13750	13760	13774	
lambda NC_001416.1	(13313)	CTGTGGACGCC	GCCTTATGAGTG	GCGGCAGAT	AAAAGTG	GAC-CTGC	GCAAAATG	GTCGTCGCGGGT	CAGTATGCTGCGT	GTTGAGTTCAGCGC	AGAG	
SARS-CoV-2 NC_045512.2	(7994)	GT--GTCTGAT	GTTGGTGATAGT	GCGGAAGT	T---G	CAGTTAAAT	GTTTGATG	CTACGTTAATA	CGTTT-T---	CATCAA-----	CTTTTA---	
											Section 143	
	(13775)	13775	13780	13790	13800	13810	13820	13830	13840	13850	13871	
lambda NC_001416.1	(13409)	TTTGAACAGGTGGT	GAACTGATGC	AGG-ATATC-----	GGCAGGA	AACACTGAATGA	AATGCACCCGTG	CGGAG-CAGT	TCGGCCAGC--	GTGGTGC		
SARS-CoV-2 NC_045512.2	(8073)	-ACGTACCAAT--	GAAAAAC	TCAAACA	CTAGTTGCAAC	TGCAGAA	GCTGAACCTGCA	AAAGAAATGT	GTCTT	AGACAATGTCTT	ATCTACTTTTAT	
											Section 144	
	(13872)	13872	13880	13890	13900	13910	13920	13930	13940	13950	13968	
lambda NC_001416.1	(13496)	TCTGGGAAATTCGAC	CCT-GACAGAGGT	CGGTGGA	GAACGTTATTT	TTCTGTAA	TGAGCA	GAACGAA	AAAGGTGAG	CCGGTCACCT--	GG----CAG-	
SARS-CoV-2 NC_045512.2	(8167)	TTCAAGCAGCTCGG	CAAGGTTTGTGATTCA	GATGTA--	GAAACTAAAGA	TGTGTGTTG	AATGTCTT	AAAT-T-GT	CACATCAATCTG	ACATAGAA	AGT	
											Section 145	
	(13969)	13969	13980	13990	14000	14010	14020	14030	14040	14050	14065	
lambda NC_001416.1	(13585)	----GGGCGACAGT	ATCAGC-GTATC-	CATT	CAGGGGAGCG	GTTT	TGAACTGA	ATGGCAAAG	GCAC	CAGTACGCGC	CCCACGCTGACGG----	TT
SARS-CoV-2 NC_045512.2	(8260)	TACTGGCGATAGT	TGTATAA	CTATATG	CTCAC	CATAACAAA	GTTGAA	AACATGACAC-CCC	GTGAC--	CTTGGTGCTTGAT	TGACTGTAGTGC	
											Section 146	
	(14066)	14066	14080	14090	14100	14110	14120	14130	14140	14150	14162	
lambda NC_001416.1	(13672)	TCTAACCTGTACG	GATATGGTCACCGGA	TGGCGGA	AGATAT	GCAGAGTC	TGGT-CGGCGG	AAAGGTGGTCC	GGCGTAAGGTTT	ACGCCGTTT	CTCTG	
SARS-CoV-2 NC_045512.2	(8353)	GCATCATATTAAT	GC-GCAGGTAGCAA	-AAGTCA	CAACAT	TGCTTTGAT	TATGGAACGTT	AAAGATTTCAT	GTCAATTGTC	TGAACAA----	CTACGA	
											Section 147	
	(14163)	14163	14170	14180	14190	14200	14210	14220	14230	14240	14259	
lambda NC_001416.1	(13768)	GATGCGGTGA	ACTTCGTCAAC	GGAACA	AGTTACGC	CATCC	GGAGCAGGA	AGGTGATCAG	CCGTGCGC	-ATTGAGCAGTGC	AGCGCACTGAGCGCG	
SARS-CoV-2 NC_045512.2	(8444)	AAACAAATACG	---TAGTGCT	GCTAA	AAAGAA	TAACTTACC	TTTT---	A---AGTTGAC	-ATGTGC	AAC-----TA-----	CTAGACAAGTTG	

SARS-CoV-2 & lambda.apr

Genomic alignment of SARS-CoV-2 NC\_045512.2 with reference sequences across 14 sections (148-154). The alignment shows high similarity with some mismatches highlighted in red. The reference sequence is shown in blue, and the SARS-CoV-2 sequence is shown in red. The alignment is presented in a grid format with columns for each section and rows for the reference and SARS-CoV-2 sequences.

Section	Reference Sequence (lambda NC_001416.1)	SARS-CoV-2 NC_045512.2
148	(14260) 14260 14270 14280 14290 14300 14310 14320 14330 14340 14356	(13864) (8517) GTGAGTGCCTCCTTTGTACTGTCCACGCAGACGGAACCGGATGGCGCTGTTTCCGGGACGTATCATGCTGGCCAACACCTGCACCTGGACCTATCTTAATGTT---GTAACAACAAAGATAGCACTTAAGGGTGGTA---AAATTGTTAATAA-TTGG---TTGA--AGCAGTT-AATTAAAGTTACACTT
149	(14357) 14357 14370 14380 14390 14400 14410 14420 14430 14440 14453	(13961) (8600) GCGGTGACGAGTGCGGTATATAGCGGTCCGGCTGTCGCGGATGAATATGA--CCAGCCACGTCCTGATCAGCAAGGATAAATGCAGCAATGCCTGTGTTCTCTTTTGTCTGCTATT--TTCTATTTAATAACACCTGTTCATGTCAATGCTAACATACAGCTTTTC---AGTGAAATCA--TAGGA
150	(14454) 14454 14460 14470 14480 14490 14500 14510 14520 14530 14540 14550	(14055) (8690) GA-GCGGTGTGTAAGTTCCGCAATTAAGTCTGCACTTTGGGGGCTTCTTTCCAATAACAACTTTTCGCAAGTAAATCCC-AAGACACAGACAGAATTAACAAAGGCTATTGTAGTGGTGTCACTCGTGACATAGCATTAC-AGATACTTGTTTTGCTAACA---AACATGCTGATTTTGACAC---ATGGTT
151	(14551) 14551 14560 14570 14580 14590 14600 14610 14620 14630 14647	(14149) (8779) CAGCGATTCTGGCGCACGCCGGCGATGTGCGCCAGCGGAGTCGTGCGGCTTCGTGGTAAGCACGCGGAGAGGGGGAAAGATATTTCCTCTGCT-AGTACAG-----CGTGTGGTAGTTA--TACTAA-----TGACAAAAGCTTGCCCATTT-----GA--TTGCT--GCAGTTCATAACAAG-AGA
152	(14648) 14648 14660 14670 14680 14690 14700 14710 14720 14730 14744	(14245) (8848) ATATCTCCGGTGAGCCGGAGGCTATTTCCGTATGTC--GCCGGAAGACTGGCTGCAGGAGAAATGCAGGGTGAGATTGTGGCGCTGGTCCACAGCCAGT-GGGTTTGTCTGTCCTGTTTGCCTGGCACGATATTACGCACA-ACATAAG--GTGACTTTTTCATTTCTTACCAGAGTTTGTAG--TGC
153	(14745) 14745 14750 14760 14770 14780 14790 14800 14810 14820 14830 14841	(14340) (8939) ACCCCGGTGGTCTGCTCCCTGGCTGAGTGAGGCCGACCGGCAGCTGAGGTGCAAGTGTATTTGCGTGGTGCTGGTCTGCCGGGGAGCAGTTTCATTAAGTTGGTAACA---CTGTTCACACCATCAAACTTATAG-A-GTACAC--TGACT---TTGCAACATCAGCTT---GTGTTTTGGC--TGCTGAA
154	(14842) 14842 14850 14860 14870 14880 14890 14900 14910 14920 14938	(14437) (9020) GTTCCGCTGTGTGCCGCATCTCACCAGGCGGCGCTTTGAGCACGGTGTGACGGACGTGTACACACTGTTCCGGGATGCTTATCATCTGGCGGGGATTGTTACAAATTTTAAAGATGCTCTGTAAAGC--C-AG-----TACCATATTGT-TATG--ATAC---CAATGTACTA---GAAGGTTCTGTTGCT

SARS-CoV-2 & lambda.apr

Genomic alignment of SARS-CoV-2 NC\_045512.2 with the reference genome across six sections (155-161). The alignment shows high sequence identity with some mismatches highlighted in red. The reference genome is shown in blue, and the SARS-CoV-2 sequence is shown in black. The alignment is presented in a grid format with columns for each section and rows for the reference and the sample sequence.

Section	Reference (lambda NC_001416.1)	SARS-CoV-2 NC_045512.2
Section 155	(14939) 14939 14950 14960 14970 14980 14990 15000 15010 15020 15035	(14534) (9098) GAGATGCCGGACTTTCATCGTGAAGATGACTGGTGCCTAACGGCCA GAATCTCTATCTGGA TAATCTGGAGGCCAGCGGGGCTGTATCAGGTGCCGT TATGAAAG-----TTTACGCCCTGACACACGTTATGTCTCA-----TGATGGCT---CTATTAT-----CAATTTCCTAAC-----
Section 156	(15036) 15036 15050 15060 15070 15080 15090 15100 15110 15120 15132	(14631) (9164) TGT CAGCGGCACAGCCGGGCGATGTGCTGCTGTGCTGTTTGTG-----TTCACT-CAGTGCCGAATCACGCCGAATTACTGCGGCACGCG-CGAAGCT -----ACCTACC----TGAAGGTTCTCTGTAGAGTGTAACAACTTTTGATTCT-----GAGTACTGTAGGCA CCGC ACTTGTGAAGA
Section 157	(15133) 15133 15140 15150 15160 15170 15180 15190 15200 15210 15229	(14722) (9239) GCTGCACCATATTCCTGGAACAACCTGAGCAAACGAGAGAGGTAC--ACGACAAATGCGCAGCGACGCA-CACACTCCCTCTGCGCTCACC GG CAT TGG TCAGAAAGCTGGTGTTTGTTGTATCTACTAGTGGT AGATG GTTACTTAACA-----ATGATTATTACAGATCTTTAC CAGGA--GTTT---TCTG--TGG
Section 158	(15230) 15230 15240 15250 15260 15270 15280 15290 15300 15310 15326	(14816) (9325) CCGCGCATCTGCCTTTACGGGGATTTTACAACGATTGTGTCGCCGCATCGACCT-TCGTGTGAA AACGGGGGCTGAAGCCATCCGGGCACTGGCCACAC TG TAGATAT-----GCTGTAAATT TACTTACTAATAATGTTTA-----CACCAC TAAT---TC AACCTA--TT--GGTGC-----TTTGAC
Section 159	(15327) 15327 15340 15350 15360 15370 15380 15390 15400 15410 15423	(14912) (9393) AGCTCCCGGC GTTTCGTCAGAAACTGAGCGACGGCTGGTATCAGGTACCGGATTGCCGGCGGGACGTCA GCACGT-CCGGGTTTAACGGCGCAGTTAC -----TATCAGG--CA----TC-TATAGTAGCTGGTGTST---ATTGTA GCTATCGTAGTA-ACATGCCTTGCCTACT-----ATTATTTATGAGGTT
Section 160	(15424) 15424 15430 15440 15450 15460 15470 15480 15490 15500 15510 15520	(15008) (9466) ATGAG-ACCTCTGCC TGATGCGC-CTGTAAATTCATATGTGTTCCCAAGAGTCGCCGGGGCCAAAGT CAGGTGGCGGTATTCCAGATTGTCTCTG GGGGCTGCG --TAGAAGAGAGCTTTTGGTGAATA CAGTCATGTAGTGCCTTAAATA-CTTT---ACTATTC-CTTATGTCATTCACTGTACT---CTGTTTAAACA CC
Section 161	(15521) 15521 15530 15540 15550 15560 15570 15580 15590 15600 15617	(15103) (9553) GCCATTGCCGGA TCATTCTTTTACCGCCGGAGCCA CCGTTGCAGCATGGGGGCGAGCCAT TGGGGCGGTGGTATGACCGGCATCC TGT TTTCTCTC --AGTT---TAC TCATTCTTTACCTGGTGTTTATTCTGTTAT--T TACTTGTACT-----TG--ACATT---TT-ATCTTAC-TAA TGATGTTCTCTT

## SARS-CoV-2 &amp; lambda.apr

												Section 162		
	(15618)	15618	15630	15640	15650	15660	15670	15680	15690	15700	15714			
lambda NC_001416.1	(15199)	GGTGCAG-TATGGTGCTCGGTGGTGTGGCGCA--GATGCTGGC-----ACCGAAAGCCA	GAACTCCCCGTATACAGACAACGGATAACGGTAAAGC											
SARS-CoV-2 NC_045512.2	(9631)	TTTAGCACA-TATTCAGTGGATGTATGTGTTTCACACCTTAGTAGCCTTTCTGGATAA	CAATTGCT--TATATCATTTGTATTT--CCA----CAAAG											
												Section 163		
	(15715)	15715	15720	15730	15740	15750	15760	15770	15780	15790	15800	15811		
lambda NC_001416.1	(15287)	AGAACACCTATTTTCTCTCACTGGATAACATGGTTCCCAGGSCAATGTTC-TGCCTGTTC	TGTACGGGGAAATGCGCGTGGGGTCA											
SARS-CoV-2 NC_045512.2	(9719)	C-ATTTCTATTGGTT-T-C-TTTAGTAATTACCTAAAG--AGACGTGTAGTCTTTAATG	GTGTTCCTTTAGTACTTTTGAAAGAACTGCGCTGCGTGTCAC											
												Section 164		
	(15812)	15812	15820	15830	15840	15850	15860	15870	15880	15890	15908			
lambda NC_001416.1	(15382)	TCTCAGGAGATCAGCACGGCAGACGAAGGGGACGGTGTGTCAGG	TGTGTGTTGATTGGTCGCTGATGCAAAATGTTTATGTGAACCGC--CTGCGGG											
SARS-CoV-2 NC_045512.2	(9811)	CTTTTTGT-TAAATAAGAAATGTATCTAAAGT-TGCGT	AGTGTGTCTATTACCCTTTACGCA--ATATAATAGATACTTAGCTCTTTATTAATAA											
												Section 165		
	(15909)	15909	15920	15930	15940	15950	15960	15970	15980	15990	16005			
lambda NC_001416.1	(15477)	CGGTTTTG-TCATTTTATGGAGCGTGAAGAAATGGGTA	AAGGAAGCAGTAAGGGGCATACCCCGCGCGAAGCGAAGGA											
SARS-CoV-2 NC_045512.2	(9904)	GTACAAGTATTTTAGTGG-AGCAATGGATACAAC	TAGCTACAGAGA-AGCTGCTTGTT-GTCATCTCGCAAAGGCTCTCAATGA											
												Section 166		
	(16006)	16006	16020	16030	16040	16050	16060	16070	16080	16090	16102			
lambda NC_001416.1	(15573)	GCTGAGTGTTGATCGATTGCATCAGCGAAGGGCCG	ATTGAAGGTCGGTGGATGGCTTAAAAAGCGTGCTGCTGAACAGTACGCCGGT											
SARS-CoV-2 NC_045512.2	(9998)	GGTTCTGAT-GTTCTTTAC----	CAACCACC-ACAAACCTCTATCACCTCAGCTGTTTGCAGAGTG											
												Section 167		
	(16103)	16103	16110	16120	16130	16140	16150	16160	16170	16180	16199			
lambda NC_001416.1	(15670)	GAGGGGAATACCAACATATCCGGTGT	CACGGTGGTGTTCGGGCTGGTGAGCAGGAGCAGACTCCGCCGGAGG											
SARS-CoV-2 NC_045512.2	(10084)	TGGTAAAGTTGAGGGTTGTATGG-TACAAGTAAC	TGTGTTGG----TACAACTACAC----TTAACGGTCTTTGGCTTGA											
												Section 168		
	(16200)	16200	16210	16220	16230	16240	16250	16260	16270	16280	16296			
lambda NC_001416.1	(15766)	ACGGTGC	TGGGTA	CGGAAGTGA	AATATGACACGC	CGATC	ACCCGCA	CCATTAC	GTCTGC	AAACATCG	ACCGTCTGCG	CTTTAC	CTTCGGT	TGTACAGG
SARS-CoV-2 NC_045512.2	(10170)	CAAGACAT	TGTGAT	CTGCA	ACCTCT--GAAGACATG	C-TTA	ACCGTA	ATTAT	GAG-----	ATTTACTC	ATTCGTAAGT	CTAAT	CATAATTTCT	TGGTA



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											Section 169																							
	(16297)	16297	16310	16320	16330	16340	16350	16360	16370	16380	16393																							
lambda NC_001416.1 (15863)		CA	CTGGT	GGA	ACCA	CCT	CAA	AGGGT	GACAGG	AA	TCCGTCGGAAGT	TC	GCCTGCTG	GT	T	CAG	A	---	TAC	AACG	T	A	ACGGT	GG	C	TGGGTG	AC	G	AA	AA				
SARS-CoV-2 NC_045512.2 (10259)		CA	GGCTG	G	TAA	TGTT	CAA	C	T	C	AGGGT	T	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---				
											Section 170																							
	(16394)	16394	16400	16410	16420	16430	16440	16450	16460	16470	16480	16490																						
lambda NC_001416.1 (15957)		A	-G	ACATC	ACCA	TTA	AGG	GCA	AAAACCA	CCTC	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---				
SARS-CoV-2 NC_045512.2 (10350)		CTA	AGTAT	AAGT	TT	GTTC	GCA	TTCAAC	CAGGACAG	CA	TT	TT	TCAG	TG	T	AG	CT	T	GT	T	ACAAT	GGT	T	C	ACC	AT	CT	G	T	T	T			
											Section 171																							
	(16491)	16491	16500	16510	16520	16530	16540	16550	16560	16570	16587																							
lambda NC_001416.1 (16046)		TG	CG	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---				
SARS-CoV-2 NC_045512.2 (10443)		TG	AG	GCCCAATTT	CA	CT	AT	T	AAG	GGTTCATT	C	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---				
											Section 172																							
	(16588)	16588	16600	16610	16620	16630	16640	16650	16660	16670	16684																							
lambda NC_001416.1 (16123)		---	GATGTGAA	AC	AG	TG	-CT	A	CCCGAAC	AC	GG	CACT	GGTC	GG	CG	GT	GCA	GGTGG	ACTCGGAGCAGTTT	GGC	AGCCAGCA	GG	TGAGCCGT	A	AT	---	---	---	---	---				
SARS-CoV-2 NC_045512.2 (10531)		TT	GTTACATGC	AC	CA	TATGG	A	ATTACCA	AC	TG	AG	TT	TCAT	G	CTG	-	GCA	---	---	---	---	---	---	---	---	---	---	---	---	---				
											Section 173																							
	(16685)	16685	16690	16700	16710	16720	16730	16740	16750	16760	16770	16781																						
lambda NC_001416.1 (16210)		TAT	CA	TCTGCG	CG	GGCGT	ATT	CT	GC	AGGT	G	C	--	GT	CG	AACTA	TA	ACCCGC	A	-G	ACGCG	GC	AAATACA	G	CGGTAT	CT	TG	GGACGG	AA	C	GTTT	AA	ACCG	G
SARS-CoV-2 NC_045512.2 (10612)		TGA	CA	GGCAAA	CAG	C	-AC	AAG	CA	GCT	GGT	AC	GGACA	CA	ACTAT	TA	CAGTTA	AT	G	TTTTA	GC	TTGGTT	G	TACGC	TGCT	GTTATA	AA	TG	GAG	A	AGGT	G		
											Section 174																							
	(16782)	16782	16790	16800	16810	16820	16830	16840	16850	16860	16878																							
lambda NC_001416.1 (16304)		CA	T	A	CAGC	AA	CA	CATGGCCTGGTGT	CTGTGGGAT	ATG	CTGACCC	A	TCCG	G	GCTAC	GGC	ATG	GGG	AA	ACGT	T	CT	TG	GGTG	CGGCGGATGTG	GA	T	AA	ATG					
SARS-CoV-2 NC_045512.2 (10708)		GT	TT	CTCA	AT	CA	TT	-----	TACCA	CAACTCTTA	ATG	ACTTT	--	A	--	AC	CTTG	TG	GCT	ATG	AAGT	ACAAT	TTA	TGAAC	CTCTAACACAA	GACC	ATGT							
											Section 175																							
	(16879)	16879	16890	16900	16910	16920	16930	16940	16950	16960	16975																							
lambda NC_001416.1 (16401)		G	CGC	TGTAT	GTCATCGGCCAGTAC	TGCGACCAGT	CAG	TGCCG	GAC	GC	TT	T	GCGGCACG	GAGC	CGCGC	ATC	ACCTG	TAATGCGTA	CCTG	ACCA	CA													
SARS-CoV-2 NC_045512.2 (10795)		T	GAC	TACTAG	GACCTCTTTCTGC	-TCAA	-----	ACT	GGAATT	G	CG	TT	TT	AGATATGTGT	GCTT	CA	-TT	AAA	AGAAT	TA	-----	C	TGC	AAA	ATG									

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										Section 176																				
	(16976)	16976	16990	17000	17010	17020	17030	17040	17050	17060	17072																			
lambda NC_001416.1 (16498)	CAGC	GTAA	GGCG	TG---	GGA	TGT	GCTCA	GC	GA	TTT	TCT	TGCTC	GGC	GAT	TGCGCTGTAT	TGCC	GG	TAT	TGGAACGGGC	AG	ACGCTGAC	GT	TCG	TG	CAGGAC					
SARS-CoV-2 NC_045512.2 (10878)	GTAT	GAA	TGG	ACGTACCATAT	TGG	G	TAGT	GC	T	TT	TAT	TAGAA	GAT	GA	ATTTACACC	TTTT	GAT	GT	TT--	GTTAG	ACA	AATGCTCA	GG	TGT	TAC	TTT---				
										Section 177																				
	(17073)	17073	17080	17090	17100	17110	17120	17130	17140	17150	17169																			
lambda NC_001416.1 (16591)	CGA	CCG	TCC	GGAT	AAGACGTG	GAC	CTAT	AAC	CGCA	GTA	ATGTGGTGAT	GCC	G	GATGATGGCGCG	--	CCG	TTC	CGC	TAC	AGCT	TCAGCG	CCC	----	---	TG					
SARS-CoV-2 NC_045512.2 (10969)	---	CC	AAA	G	TGC	AGTGA	AAAA	GAA	CA--	AT	CAAGG	GTA	CACACCACTG	GTT	G	TTACTCACAATTTTGAC	TTC	ACT	TTT	AGT	T	TTAGT	CC	A	GAGTACT					
										Section 178																				
	(17170)	17170	17180	17190	17200	17210	17220	17230	17240	17250	17266																			
lambda NC_001416.1 (16681)	AA	---	GAC	CGCCA	TAA	TGCCG	TTGAGG	TGAA	CTG	GAT	TGACCCGAACAACGGC	TGGG	AGACGGC	GAC	AGAG	CT	TG	TTGAAG	ATACGCAGGCCAT	TGC										
SARS-CoV-2 NC_045512.2 (11060)	CAAT	---	G	GT	CTTTG	TTC	TTTTT	TT	TGTA	TGAA	AATG	CCT	TTTTTACCTTTTGCTA	TGGG	TATTATT	GCT	ATGT	CT	GCT	TTTGCA	AA	----	---	---	---	TGATG	TTT			
										Section 179																				
	(17267)	17267	17280	17290	17300	17310	17320	17330	17340	17350	17363																			
lambda NC_001416.1 (16776)	CCGTTACGGT	CG	TAA	TGT	TAC	GAA	GAT	TGGAT	TGCC	---	TTT	G	CT	TGTACCAG	CCG	GGGG	CAG	GCAC	ACCGCGCCGGGCT	GTGGC	TGATTAAAAC	AG	AACT							
SARS-CoV-2 NC_045512.2 (11150)	GTCA	---	AA	CA	TAA	GCA	TGC	ATTTCT	CTGT	TTGT	TTT	TGT	T	ACCTTCT	CTT	G	CCA	CT	G	TAG	CTT	ATTTTAAATATG	GT	CTA	TATGCCTGCT	AG	TTGG			
										Section 180																				
	(17364)	17364	17370	17380	17390	17400	17410	17420	17430	17440	17450	17460																		
lambda NC_001416.1 (16872)	GCTGGAAACGCAGA	---	CG	TGG	AT	TTTCAGC	GT	CG	GC	AG	AAGGGC	TT	CGCCA	TG	TAC	CG	GG	CGAT	TGTTAT	TGAAAT	CTGCG	---	ATGATGAC	TATG	CCG					
SARS-CoV-2 NC_045512.2 (11243)	GTGATGCGTATTATGA	CA	TGG	T	TGGATAT	G	---	TTG	ATAC	---	T	---	AG	TT	TGT	CT	GG	TTTT	T	AAGC	TAA	AA	GA	CTGT	GT	-----	TATG	TAT		
										Section 181																				
	(17461)	17461	17470	17480	17490	17500	17510	17520	17530	17540	17557																			
lambda NC_001416.1 (16967)	GT	ATCAGC	ACCGGTG	GT	CGTG	TG	CTGG	---	GGT	GAACAGC	CA	GACC	CG	GACGC	TGA	CG	CT	CG	ACCG	TGAAATCAC	GCT	GCCAT	CCTCCGGTACCGCGC							
SARS-CoV-2 NC_045512.2 (11321)	GC	ATCAGC	TGTA	---	GT	G	---	T	ACT	TAAT	CT	TATGACAG	CA	AGAACT	GT	TGTA	TGA	T	GATGG	---	TGCT	TAG	---	GAGAGT	---	GTGGA	CACTTAT	---	---	
										Section 182																				
	(17558)	17558	17570	17580	17590	17600	17610	17620	17630	17640	17654																			
lambda NC_001416.1 (17063)	TGAT	AAG	CT	GGTTG	AC	GGAAG	TGGC	AA	TCC	---	GGT	CAG	CGTGGAGG	T	CAG	T	CCGTCACCGACGGCGTGA	AGG	TAA	AA	GTGAGC	---	CGT	GT	TCCTGAC					
SARS-CoV-2 NC_045512.2 (11402)	---	AA	T	GT	CT	---	TGAC	AC	TCGTT	TATA	AA	GTTTAT	TAT	G	GT	---	AA	T	G	CTT	TAG	---	---	---	---	---	---	---	---	---

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	(17655)	17655	17660	17670	17680	17690	17700	17710	17720	17730	17740	17751																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
lambda NC_001416.1 (17158)	GGT	GTTGCTG	AA	TACAG	C	GTA	TG	GGAGCTGAAGCTGCCGACG	C	TGCGCCAGC	G	ACTGTTCCGC	TG	CGT	GAGT	TATCCGTGAGAAC	GACG	ACG	GC	AC	GT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
SARS-CoV-2 NC_045512.2 (11483)	GTT	-ACTTCT	AA	CTACT	C	AGG	TG	TAG-----TTAC-AACTGT	C	ATGTTTTT	TG	GC	CAG	AGGTAT	TG	TTT	TTA	T	-G----	TGTGTT	GAGT	ATT	GC	CTA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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	(17752)	17752	17760	17770	17780	17790	17800	17810	17820	17830	17848																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
lambda NC_001416.1 (17255)	A	TGC	CA	TCA	CCG	C	G	TGC	AGCATG	TG	C	-G	AA	AA	GAGGCCA	T	CG	T	G	A	T	AACGG	GGC	GCAC	TTTG	ACGGC	G	AACAGAG	TGGC	ACGG	T	GAA	T	GGTG																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
SARS-CoV-2 NC_045512.2 (11568)	T	TTT	CT	TCA	TAA	CT	G	GTA	A	TACAC	T	C	AGT	G	T	A	T	AA	TGCTAGT	T	A	T	T	G	T	T	C	T	T	AA	GGC	CTCT	T	TTG	T	TAC																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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	(17849)	17849	17860	17870	17880	17890	17900	17910	17920	17930	17945																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
lambda NC_001416.1 (17351)	T	C	A	C	G	C	G	C	A	G	C	A	G	C	A	G	C	A	G	C	A	C	T	G	A	C	G	C	A	G	C	A	C	T	G	A	C	A	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
SARS-CoV-2 NC_045512.2 (11664)	T	C	A	C	G	-	-	CTA	CTT	TAG	A	CTGA	CT	-	-	CTT	-	G	T	G	T	-	T	A	T	G	A	T	A	CT	TAG	TTT	CT	A	C	A	C	A	G	A	G	T	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T	A	G	A	T

SARS-CoV-2 & lambda.apr

Genomic alignment of SARS-CoV-2 NC\_045512.2 with reference sequences, showing mutations highlighted in yellow and green. The alignment is divided into sections 190 through 196. Mutations are indicated by colored boxes: yellow for single nucleotide changes and green for insertions/deletions. The reference sequence is shown in blue and the sample sequence in black.

**Section 190**

(18334) 18334 18340 18350 18360 18370 18380 18390 18400 18410 18420 18430  
 lambda NC\_001416.1 (17814) GTAC TGGATAGCCG C CAGTATCAATATCAAACCGG G C ATGAT TATTACTTTT TATAT -- CCG CAGTGTGAAC ACCGTTGGCA AATC GGCAT T TCGT G-  
 SARS-CoV-2 NC\_045512.2 (12109) TAGT T C C C T T -- C CATCATATGCAGCTTT --- T G C T A C T G C T CAAGAAGC T TATGAG CAGGCTGT TGCTA A T -- GGT G A T T C T GAAG T T G T T C T

**Section 191**

(18431) 18431 18440 18450 18460 18470 18480 18490 18500 18510 18527  
 lambda NC\_001416.1 (17908) G A G G C C G T C G G T C G G C G C A T G A T G C G G A A G T T A C T G G A T T T T T C A A A G G C A A G A T A A C C G A A T C C C A T C T C G G C --- A A G C A G C T G C T G  
 SARS-CoV-2 NC\_045512.2 (12196) T A A A A A G T T G A A G A A G --- T C T T --- T G --- A A T G T G G C T A --- A A T C T G A A T T T G A C C G T --- G A T G C A G C C A T G C A A C G T A A G T T G G

**Section 192**

(18528) 18528 18540 18550 18560 18570 18580 18590 18600 18610 18624  
 lambda NC\_001416.1 (18001) G A A A A A G T C G A G C T G A C G G A G G A - T A A C G C C A G C A G A C T G G A G C A G T T T T C G A A A G A G T G G A A G G A T G C C A G T G A - T A A G T G G A A T G - - C C A T G T G G  
 SARS-CoV-2 NC\_045512.2 (12270) A A --- A A G A T G G C T - G A T C A A G C T A T G A C C A A T G T A T A A A C A G G C T A G A T C T G A G A C A A G A G G --- G C A A A A G T T A C T A G T G C T A T G C A G A C A A

**Section 193**

(18625) 18625 18630 18640 18650 18660 18670 18680 18690 18700 18710 18721  
 lambda NC\_001416.1 (18094) G C T G T C A A A A T T G A G C A G A C C A A A G A C --- G G C A A A C A T T A T G T C G C G G G T A T T G G C C T C A - G C A T G G A G G A C A C G G A G G A A G G C A A A C T G A G C A G  
 SARS-CoV-2 NC\_045512.2 (12360) T G C T T T T T C A - C T A T G C T T A G --- A A A G T T G G A T A A T G A T G C A C T C A A C A A --- C A T T A T C A A C A A T G C A A G A G A T G G T T G T G T T C C C - T T G A C A T A

**Section 194**

(18722) 18722 18730 18740 18750 18760 18770 18780 18790 18800 18818  
 lambda NC\_001416.1 (18187) T T T C T G G T T G C C G C C A A T C G T A T C G C A T T T A T T G A C C C G G C A A C G G G A A T G A A A C G C G A T G T T T G T G G C G C A G G G C A A C C A - G A T A T T C A T G A A C  
 SARS-CoV-2 NC\_045512.2 (12449) A T A C C T C T T T A - C A A C A G C A G C C A A A C T A A T G G T T --- G T C A T A C C A G A C T A T A A C A C A T A T A A A A A T A C G T G T G A T G G T A C A A C A T T T A C T T A T G C

**Section 195**

(18819) 18819 18830 18840 18850 18860 18870 18880 18890 18900 18915  
 lambda NC\_001416.1 (18283) G A C G T G T T C C T G A A G C G C C T G A C G G --- C C C C C A C C A T T A C C A G C G G C - G G C A A T C T C C G G C C T T T C C C T G A C A C C G G A C G G A A A G C T G A C C G  
 SARS-CoV-2 NC\_045512.2 (12541) A T C A G C A T - - T G T G G A A A T C C A A C A G G T T G T A G A T G C A G A T A G T A A A A T T G T T C A A C T T A G T G A A A T T - A G T A T G G A C - A A T T C A C C T A A T T T A G

**Section 196**

(18916) 18916 18930 18940 18950 18960 18970 18980 18990 19000 19012  
 lambda NC\_001416.1 (18374) C T A A A A A T G C G G A T A T C A G T G G C A G T G T G A A T G C G A A C T C C G G G A C G C T C A G T A A T G T G A C G A T A G C T G A A A A C T G T A C G A T A A A C G G T A C G C T G A G  
 SARS-CoV-2 NC\_045512.2 (12633) C - - A T G G C C T C T T A T T G - T A A C A G C T T T A A G G G C A A T T C T G C T G T C A A A T T A C A G A A T A A T G A G C T T A G T - C T G T T G C A C T A C G A C A G A T G T C T T

SARS-CoV-2 & lambda.apr

SARS-CoV-2 & lambda.apr

Figure 1 displays a multi-panel sequence alignment showing the evolution of SARS-CoV-2 NC\_045512.2 from 1969 to 2037. The figure is divided into seven sections (204 to 210) by horizontal lines. Each section displays a reference sequence (lambda NC\_001416.1) and a SARS-CoV-2 sequence (NC\_045512.2) with mutations highlighted in yellow. The sequences are color-coded by year: 1969 (blue), 1970 (green), 1971 (blue), 1972 (green), 1973 (blue), 1974 (green), 1975 (blue), 1976 (green), 1977 (blue), 1978 (green), 1979 (blue), 1980 (green), 1981 (blue), 1982 (green), 1983 (blue), 1984 (green), 1985 (blue), 1986 (green), 1987 (blue), 1988 (green), 1989 (blue), 1990 (green), 1991 (blue), 1992 (green), 1993 (blue), 1994 (green), 1995 (blue), 1996 (green), 1997 (blue), 1998 (green), 1999 (blue), 2000 (green), 2001 (blue), 2002 (green), 2003 (blue), 2004 (green), 2005 (blue), 2006 (green), 2007 (blue), 2008 (green), 2009 (blue), 2010 (green), 2011 (blue), 2012 (green), 2013 (blue), 2014 (green), 2015 (blue), 2016 (green), 2017 (blue), 2018 (green), 2019 (blue), 2020 (green), 2021 (blue), 2022 (green), 2023 (blue), 2024 (green), 2025 (blue), 2026 (green), 2027 (blue), 2028 (green), 2029 (blue), 2030 (green), 2031 (blue), 2032 (green), 2033 (blue), 2034 (green), 2035 (blue), 2036 (green), 2037 (blue). The SARS-CoV-2 sequence is shown in black text, with mutations highlighted in yellow. The reference sequence is shown in blue text. The sequences are aligned by year, with the year of the mutation indicated above the sequence.

## SARS-CoV-2 &amp; lambda.apr

																Section 211																				
	(20371)	20371	20380	20390	20400	20410	20420	20430	20440	20450	20467																									
lambda NC_001416.1 (19733)		T	AAC	AGCACCACGGTG	GT	GGTGA	ACA	CGGTGG	CTCAGAGAA	TCCGGAT	GA-AGCCGGG	GC	GT	TACAGCA	-----	TGGATGTGG	AGTA	-CGGTC																		
SARS-CoV-2 NC_045512.2 (13968)		C	AAC	TTAGGTGAACGT	GT	ACGCC	AAG	CTTT--	GTAA	AAACA	GTACA	AAT	T-CT	G	TGATGC	CATGCGAA	AT	TGCTGGTAT	TG	TTGGTGT	ACTGAC	ATT														
																Section 212																				
	(20468)	20468	20480	20490	20500	20510	20520	20530	20540	20550	20564																									
lambda NC_001416.1 (19819)		AG	TACAGT	TGTCATC	C-TGCA	GGT	TGAC	GGT	TTTCC	ACCATCGCAC	GCCGGGA	C	CAT---	C---	A	CCGT	GTA	TGAAGA	-TTC	---ACA	A---	CCGG														
SARS-CoV-2 NC_045512.2 (14062)		GA	TAA--	TCAAGAT	CTCAAT	GGT	AACT	GGT	ATGAT	-----	TTCG	TGATTT	C	ATACAAA	C	CACG	CCAG	GTA	GTGGAGT	TCT	TGTTGT	AGATTCTTA														
																Section 213																				
	(20565)	20565	20570	20580	20590	20600	20610	20620	20630	20640	20650	20661																								
lambda NC_001416.1 (19900)		GG	ACG	CTGAA	TGATTTT	CTCTG	TGCC	ATGACGGAGGA	TGA	TGCC	GCCGG	A	GGT	GCT	G	CTC	G--	TCTTGA	ACTGATGGT	-GG	AA	GAGGT	TGGCGCG													
SARS-CoV-2 NC_045512.2 (14151)		TT	ATT	CATTG	TAA	TGC	CTA--	TATT	AACCT	-----	TGA	CCAGG	G	CTTTA	A	CTGCA	-G	ATCACA	TG	TTGA	CACTGACT	TAA	AAAGCCTTACATT													
																Section 214																				
	(20662)	20662	20670	20680	20690	20700	20710	20720	20730	20740	20758																									
lambda NC_001416.1 (19994)		T	AAC	GC	GTC-C	GTGGTGGC	A	CAGAGT	-ACGG	CAGA	CGC	G	AAG	AAA	TCAGCC	GG	GAT	TGCCAG	TGC	ATCAGC	TG	CTCAGGT	CGCGG	CC	CTTGTG	ACTG										
SARS-CoV-2 NC_045512.2 (14239)		A	AGT	GG	GATTT	GT	TAA	AAT	ATGACT	TC	ACGG	A	AGAG	G	TTA	AAA	CTCTTT	G	ACG	T	TATTT	T--	AAATAT	TG	GGATCAGACATA	CC	ACCCAAATTG									
																Section 215																				
	(20759)	20759	20770	20780	20790	20800	20810	20820	20830	20840	20855																									
lambda NC_001416.1 (20089)		ATGC	AACTG	AC	T	CAGCACGC	G	CC	GC	CAG	CACGT	CGCCG	GAC	AGGCT	TGC	ATCGT	CAGC	TC	AGGA	AGC	GTCC	TCC	GGCG	G-----	CAGAAG	CGGGCAT	C									
SARS-CoV-2 NC_045512.2 (14334)		TGTT	AACTG	TTT	TGGATGACA	GAT	GC	ATT	CT--	G	ATTGT	GCA	AACT	T	TAAT	GT	TTAT	TC	TCT	ACA	-GT	GT	TCC	CA	CCTACAAGTTTTG	G	ACCAC	TA								
																Section 216																				
	(20856)	20856	20870	20880	20890	20900	20910	20920	20930	20940	20952																									
lambda NC_001416.1 (20180)		A-	GCA	AA	GGCC	A	CTGAAGCG	G	AAAA	AA	GTG	CCG	CA	GCCGCA	G	AGTCC	T	CAA	AA	AAC	G	CGG	CGG	CA	C	CAGTGC	CGGT	G	CGGC	G	AA	ACGT	-CAGAA	A		
SARS-CoV-2 NC_045512.2 (14428)		GT	GAG	AAAAAT	A	T-----	TT	G	TG	A	TG	GTG	TTC	CA	---	TTT	G	TAG	--	TTTC	AA	CTG	G	ATA	C	CA	CTT	CAGAGAG	CTAG	G	TG	TTGT	A	ATAAT	CAGGA	T
																Section 217																				
	(20953)	20953	20960	20970	20980	20990	21000	21010	21020	21030	21049																									
lambda NC_001416.1 (20275)		CG	AA	TGCT	TG	CAGCG	T	CA	CA	AC	AAT	C	AGCCG	CC	CAGT	CT	G	CCTCC	A	CCGCG	CC	CAGAAAGCG	T	CA	G	AGG	CGCG	C	ACT	T	CAGCAC	G	AGATGCGGT	G	GC	
SARS-CoV-2 NC_045512.2 (14515)		GT	AA	ACT	TAC	---A	TAG	CTCT	AG	ACT--	TAGT	-TT	T	AAG	GAATTA	--	CTT	G	TGTAT	-G	TGCT	T--	G	ACC	T	-G	CTAT	TG	CA	CGCT	G	CTTCTG	---	GTA		

## SARS-CoV-2 &amp; lambda.apr

										Section 218
										21146
lambda NC_001416.1 (20372)	(21050)	21050	21060	21070	21080	21090	21100	21110	21120	21130
SARS-CoV-2 NC_045512.2 (14597)										
										Section 219
lambda NC_001416.1 (20459)	(21147)	21147	21160	21170	21180	21190	21200	21210	21220	21230
SARS-CoV-2 NC_045512.2 (14682)										21243
										Section 220
lambda NC_001416.1 (20556)	(21244)	21244	21250	21260	21270	21280	21290	21300	21310	21320
SARS-CoV-2 NC_045512.2 (14750)										21330
										Section 221
lambda NC_001416.1 (20653)	(21341)	21341	21350	21360	21370	21380	21390	21400	21410	21420
SARS-CoV-2 NC_045512.2 (14833)										21437
										Section 222
lambda NC_001416.1 (20750)	(21438)	21438	21450	21460	21470	21480	21490	21500	21510	21520
SARS-CoV-2 NC_045512.2 (14921)										21534
										Section 223
lambda NC_001416.1 (20844)	(21535)	21535	21540	21550	21560	21570	21580	21590	21600	21610
SARS-CoV-2 NC_045512.2 (15002)										21620
										Section 224
lambda NC_001416.1 (20940)	(21632)	21632	21640	21650	21660	21670	21680	21690	21700	21710
SARS-CoV-2 NC_045512.2 (15074)										21728



## SARS-CoV-2 &amp; lambda.apr

Section 225																										
	(21729)	21729	21740	21750	21760	21770	21780	21790	21800	21810	21825															
lambda NC_001416.1 (21037)		CGCGC	TTGCGGGTAAAC	AAACGAAGAAT	GGG---ACACT	GACGGCGCTG	GCAAGGGCTTTCC	ACGGC	GAAAATAAAT	TACCGTAT	TTTGC	GGAAAA														
SARS-CoV-2 NC_045512.2 (15159)		AAAA-TTATT	-----GA	AAATCAATAGCC	GC	CACTAGAG	-GAGCTAC	--TGT	-----GT	AATTG	GAAAGCAAA	TTCTATGGTGGT	GGCAACA													
Section 226																										
	(21826)	21826	21840	21850	21860	21870	21880	21890	21900	21910	21922															
lambda NC_001416.1 (21131)		GATGCCGCC	AGCCTGAC	TGAAC	TGACTC	AGGTTGG	CAGGGA	TATTTCTGG	CAAAAAATTCCG	TTGCAGATGT	--TCTTGA	ATACCTTGGG	GCCGGTG													
SARS-CoV-2 NC_045512.2 (15240)		CATGTTAAAA	AAC	TGTT-TAT	AGTGA	TGTAG	AAAAAC	CTC-ACCT	TATGG	GT-----TG	GATTATCCTAAA	TGTGATAGAGCCAT	GCCTAAC													
Section 227																										
	(21923)	21923	21930	21940	21950	21960	21970	21980	21990	22000	22019															
lambda NC_001416.1 (21225)		AGAATTCGGCCT	TTCCGGC	AGGTG	CGCCGATCCCG	TGGCAT	CAGATAT	CGT	TCCGT	CT-GGCTAC	GTCCTG	ATGCAGGGG	CAGGCGT	TTGAC	AAAT											
SARS-CoV-2 NC_045512.2 (15325)		AT--GCTTAGAA	TTAT	GGCCT-CA	CTTGTCTTGCT	TCGCA	AAACATA	CAACGT	GTTGT	--A--GCTT	GTC---	ACACCGTTTT	CTATAGA	TTAGCT	AAT											
Section 228																										
	(22020)	22020	22030	22040	22050	22060	22070	22080	22090	22100	22116															
lambda NC_001416.1 (21321)		CAGCC	TA-----CCCAAA	ACTTGCTGTCG	GTAT	CCAT	CGGGT	GTG	CTTCC	TGATAT	TGCGAGGCT	-GGACAA	TCAAGG	GGAAACC	CGC	CAGCG	GTCTG									
SARS-CoV-2 NC_045512.2 (15412)		GAGTG	TGCTCAAGTATTG	AGT	GAAATGGT	CATGT	TGTGG	CG---	GT	CTACTAT	TATGT	TAAACCAGGT	GGACC	TCA	TCAGGAG	ATG	CCA	CAACT	GCTT							
Section 229																										
	(22117)	22117	22130	22140	22150	22160	22170	22180	22190	22200	22213															
lambda NC_001416.1 (21412)		--TGC---	GTATT	GCTCAGGAACAGG	ATGGAAT	TAA	GTCGCA	CA	CCCACAGTGC	CAGT	TGCATC	CGGTACG	GATTTGGGG	ACG	AAAA	CCACATC	GT									
SARS-CoV-2 NC_045512.2 (15506)		ATGCTAATA	GTGTTT	TTAACATTTGTCA	AGCTG--	T	CACG--GC	CA	ATGTT-AATG	CAC	TTTTAT	CTAC--T	GAT	GGTAAC	AAA	ATTG	CCGATAAG	GT								
Section 230																										
	(22214)	22214	22220	22230	22240	22250	22260	22270	22280	22290	22300	22310														
lambda NC_001416.1 (21504)		CGTTTG--	ATT---	ACGGG	ACGAAAAACAACAG	G	CAG--T	TCGAT	TA	CG	CACCAA	ATCG	ACGAA	TAAACACGG	GG	GCTCATGCTC	CAGT	TCT	GAGC							
SARS-CoV-2 NC_045512.2 (15596)		ATG	TCCGC	AA	TTTAC	AACAC	AGACTTTATGAGT	G	TCTCTAT	TAGAA	ATA	GAG	ATGTTG	ACAC	AGACT	TTGTGAAT	GAGT	TTTACGCATATT	TGC	GTAA						
Section 231																										
	(22311)	22311	22320	22330	22340	22350	22360	22370	22380	22390	22407															
lambda NC_001416.1 (21593)		--GG	TTCAAC	AG	GGGCCGCGGG	T	GCTCATGCC	C	ACACAA	GTG	GTT	TAA	GG--	ATGA	ACAGT	TCT	GGCT	G	GAG-TCA	G	TAT	GGAAC	AGC	AA	CCAT	TTAC
SARS-CoV-2 NC_045512.2 (15693)		ACAT	TTCTCA	AT	GATGATACT	C	TGACGATG	C	TGTTGT	GTG	TTT	CAATAGC	ACTT	ATGCA	TCT	CAAG	G	TCTAGTG	G	CTAGCATA	AAG	AA--	CTT	TA		

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## SARS-CoV-2 &amp; lambda.apr

Section 239												
	(23087)	23087	23100	23110	23120	23130	23140	23150	23160	23170 23183		
lambda NC_001416.1 (22335)		AAAAC	TGT-TC	CGGATCC	GGGAGGCGG	AAGAAAC	AAAAAGCC	TGATGCAGG	TAGCC--	AGTGAGCATATTGCGCCGCTTCAGGATGCTGCAGAT		
SARS-CoV-2 NC_045512.2 (16396)		GGTTG	TGATGT	CACAGAT	GT-GACTCA	ACTTTAC	TTAG--G-AGG	TATGAGCTA	TATTGTAA--	ATCACATA--AACCAACCATTAGTTTTCAT		
Section 240												
	(23184)	23184	23190	23200	23210	23220	23230	23240	23250	23260 23270 23280		
lambda NC_001416.1 (22429)		--CT	TGGA	AAT	T--GC	AACGAAG	GAAGAAACCTCGTTGCT	TGGAAGCC	TGGAAGA	AGTATCGGGTGTGTGATACATC---AACTGCA		
SARS-CoV-2 NC_045512.2 (16485)		GTG	TGCT	AAT	TGGACA	AGTTTTT	GGT--TTATATAAAAA	TACATGTGT	TGGT--	AGCGATAA-TGTTACTGAC-TTTAAATGCAATTG-CAACATGTGA		
Section 241												
	(23281)	23281	23290	23300	23310	23320	23330	23340	23350	23360 23377		
lambda NC_001416.1 (22519)		CCT	GAT	ATTGAG	TGGCCTGCTGTCCC	TGT-TAT	TGGAGTAA	TCGTTTGTGAT	TATGCC	CGCAGAAACGTTGTATGAAATAACGTTCTGCGGTTAGTTA		
SARS-CoV-2 NC_045512.2 (16575)		CTG	GACA	AATGC	TGGTGATTACATTT	TAGCTA	ACACCTG-TACT	GAAAGACTCA	AGCTTTTTTGC	AGCAGAAACGCTCAAAGCTACTGAGGAGACAT		
Section 242												
	(23378)	23378	23390	23400	23410	23420	23430	23440	23450	23460 23474		
lambda NC_001416.1 (22614)		GT	ATAT	TGTAA	AGCTGAG	TATTG	GTTTAT	TGTGGCGAT	TATTAT	CTTCAGGAG-AAT	AATGGAGTTCATGACTCAATTGTTCATAGTGTTTACATC	
SARS-CoV-2 NC_045512.2 (16671)		TAA	AC	TGTCTT	ATGGT	ATT----	GCTACT	TGTACG--	TGAAGT	CTGTCTGACAGAG	AATTACATCTTTTCATGGGAAGTTGGTAACCTAGAC-----	
Section 243												
	(23475)	23475	23480	23490	23500	23510	23520	23530	23540	23550 23560 23571		
lambda NC_001416.1 (22710)		AC	CGC	CA--	ATTG	CTTTTA	AGACTG-----	AACG	CATGAAA-	TATGGTTTT	TCGTCATGTTTTGAGTCTCTGCTGTTGATATTTCTAAAGTCGGT	
SARS-CoV-2 NC_045512.2 (16757)		CAC	CA	CTTA	ACC	GA---A	TTAT	TGTCTTTACTG	GTAT	CTGTGTAAC	TAAAAACAGTAAAGTACAAATAGGA--GA-G--TACA---CT-----	
Section 244												
	(23572)	23572	23580	23590	23600	23610	23620	23630	23640	23650 23668		
lambda NC_001416.1 (22795)		TT	TTTTTCTTC	GTTT	TCTCTA	ACTATTT	CCATG	AAATCAT	TTTTG	ATTATTATTTG	AATCAATT-CCAAATACCTGAAGTCTTTCATCTATAATT	
SARS-CoV-2 NC_045512.2 (16835)		TT	GAAAAAGGT	GAC-TA	TGGTGA	TGCTGT	TGT	TACCG	AGGT---	ACAACA	ACTTACA	AATTAATTTGTTGGTGAATTATTTTGTGCTG-ACATCACAT
Section 245												
	(23669)	23669	23680	23690	23700	23710	23720	23730	23740	23750 23765		
lambda NC_001416.1 (22891)		GGCA	TGT	TATGTATTGGTTT	ATTGG	AGTAG	TGCTTG	CTTTT	CTGAG	CCATAGCTCT	GATATCCA	AATGAAGCCATAGGCATTTGTTATTTGGCTC
SARS-CoV-2 NC_045512.2 (16927)		ACAG	TAA	TGC-----	C	ATT	A-AGT	GCA	C-----	CT	ACACTA	GTGCCACAAGAGCAC---TATGTTAGAATT---ACTGGCTTATACCCAAC

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												Section 246																								
	(23766)	23766	23780	23790	23800	23810	23820	23830	23840	23850	23862																									
lambda NC_001416.1 (22988)		TG	TCA	GCTG	CAT	AAC	G-CCA	AAAA	TAT	TTT	ATCT	GCTT	GAT	CT	TCAA	ATGTT	GTA	TTAA	ATCA	ATTG	AT---	GGA	ATTG	TTT	ATC	ATA	AA									
SARS-CoV-2 NC_045512.2 (17001)		AC	TCA	ATAT	CTCA	--	GATG	-A	GTTT	CTA	GCA	AT	GT	TGCA	AA	TA	TCAA	-----	AAG	GT	TGGT	AT	GC	AA--	AAG	TATT	CT	ACAC	TCC--	AGGG	A					
												Section 247																								
	(23863)	23863	23870	23880	23890	23900	23910	23920	23930	23940	23959																									
lambda NC_001416.1 (23081)		AA	AT	TAA	TGT	TT	GAA	TGT	GAT	A	ACCGT	CCT	TT	AAAA	AG	TCG	TT	CT	GCA	AG	CTT	GGCT	GTA	TAG	TC	-AACT	AA	---	TCT	TCT	GTC	GAA	GT	GATA		
SARS-CoV-2 NC_045512.2 (17084)		C	ACC	TGG	TAC	TGG	TAA	GAG	TCA	TTTT	TG	CA	TT	GGCCT	AG	CTC	TCT	ACTA	-CC	CTT	CTGCT	CG	-CA	TAGT	GTA	TAC	AGCT	TGC	TCT	CAT	GCC	G	-TGT			
												Section 248																								
	(23960)	23960	23970	23980	23990	24000	24010	24020	24030	24040	24056																									
lambda NC_001416.1 (23173)		TTT	TTAGG	CT	TAT	CT	ACCA	GTT	TTAG	AC	GC	TCT	TT	TAA	TAT	CT	TC	AG---	GAA	T	TATT	TTAT	T--	GT	CA	TAT	TG	TAT	CA	TGCT	AAA	TG---	ACA	AAT	TT	
SARS-CoV-2 NC_045512.2 (17178)		TGA	TGCA	CTA	TG	TGAGA	AG	GCA	TTAA	AA	TAT	-TT	GCC	TAT	AGAT	AA	TGT	AG	TAGAA	TTAT	ACCT	G	CA	CG	TGC	TCGT	G	TAG	AGT	G	TTTT	TG	AT	AA	TT	
												Section 249																								
	(24057)	24057	24070	24080	24090	24100	24110	24120	24130	24140	24153																									
lambda NC_001416.1 (23262)		GCT	TAT	TGG	AGT	TAA	TCT	TTT	TA	-ATTT	TA	-AA	TAG	TT	AT	CT	CCT	GGC	TT	CAT	CAAA	TAA	AGAG	TC	GA	AT	GAT	GTT	GGC	-GAA	AT	CA	CAT	CTG	TAC	CCC
SARS-CoV-2 NC_045512.2 (17274)		CAA	AG	TGA	AT	TCA	CA	TT	AGAA	CAG	TA	-GT	CTT	TT	GT	ACT	GTAA	-AT	G	CAT	TGCC	TGA	GAC	---	GAC	AG	CA	---	GAT	AT	AGT	TGT	CT	TT	GAT	GAA-
												Section 250																								
	(24154)	24154	24160	24170	24180	24190	24200	24210	24220	24230	24240	24250																								
lambda NC_001416.1 (23356)		ATT	GG	AT	TG	TTT	ATT	TG	TAT	GCCA	AGAG	AGT	TACA	G	CAGT	TA---	TAC	ATT	TGC	CA	TAG	AT	TAT	AGC	TA	AGGC	AT	GTA	ATA	ATTC	GTA	ATC	TT	TTA		
SARS-CoV-2 NC_045512.2 (17362)		ATT	TC	AA	TG	GCC	ACAAA	T	TAT	GAT	--	TTGAG	T	GTT	G	TCAA	TGCC	AG	ATT	ACG	TGC	TA	AGC	AC	TAT	GTG	TA	CA	-TTG	GCG	AC--	CCT	G	CTCA	TT	ACC
												Section 251																								
	(24251)	24251	24260	24270	24280	24290	24300	24310	24320	24330	24347																									
lambda NC_001416.1 (23450)		GCG	TATTA	GC	GACC	CAT	C	GTCT	TT	CT	GAT	-TTA	ATA	ATAG	ATGA	TT	CAG	TTAA	AT	AT	GAAG	GT	AA	TT	CT	TTTT	TG	CAAG	TC	TG	ACT	AA	CTT	TT	TTA	
SARS-CoV-2 NC_045512.2 (17454)		TGC	ACCAC	GC	---	A	CAT	T	GC-	TAA	CTA	AGGG	CA	CTAGAA	CC	AGA	ATA	TT	TC	A-	AT	TC	-AGT	GTG	TAG	--	ACT	TA	-----	TG	---	AAA	AC	TAT	AG	
												Section 252																								
	(24348)	24348	24360	24370	24380	24390	24400	24410	24420	24430	24444																									
lambda NC_001416.1 (23546)		TA	CCA	ATGT	TTAA	CAT	ACTTT	CAT	TT	GTA	ATAAAC	-TCAA	TG	TC	ATT	T	CTT	CA	TGT	AA	-----	GAT	G	AAATA	----	AG	AG	TA	GC	CTT	TG	CCT				
SARS-CoV-2 NC_045512.2 (17534)		GT	CCA	GACA	TGTT	CT	CGGA	CT	TG	TCGG	CGTT	GT	CTG	C	TG	CA	ATT	G	TGA	CA	TGT	G	AGT	G	CTT	TG	TT	AT	GATA	ATA	AG	CT	TA	AAG	CACATAA	

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Section 253												
	(24445)	24445	24450	24460	24470	24480	24490	24500	24510	24520	24530	24541
lambda NC_001416.1 (23630)		C	G	C	T	A	T	A	T	T	C	T
SARS-CoV-2 NC_045512.2 (17631)		A	G	-	A	C	A	A	T	C	A	G
Section 254												
	(24542)	24542	24550	24560	24570	24580	24590	24600	24610	24620	24638	
lambda NC_001416.1 (23720)		T	A	A	C	A	T	T	A	T	T	C
SARS-CoV-2 NC_045512.2 (17724)		A	A	G	A	A	T	T	C	C	A	G
Section 255												
	(24639)	24639	24650	24660	24670	24680	24690	24700	24710	24720	24735	
lambda NC_001416.1 (23817)		C	A	A	T	T	C	A	A	T	T	C
SARS-CoV-2 NC_045512.2 (17797)		G	T	A	G	C	T	C	A	A	T	T
Section 256												
	(24736)	24736	24750	24760	24770	24780	24790	24800	24810	24820	24832	
lambda NC_001416.1 (23903)		-	A	T	G	T	T	T	T	T	T	T
SARS-CoV-2 NC_045512.2 (17890)		A	C	A	G	T	C	A	T	T	T	C
Section 257												
	(24833)	24833	24840	24850	24860	24870	24880	24890	24900	24910	24929	
lambda NC_001416.1 (23995)		C	A	A	T	T	C	A	A	T	T	C
SARS-CoV-2 NC_045512.2 (17967)		T	G	A	T	A	G	A	T	T	T	C
Section 258												
	(24930)	24930	24940	24950	24960	24970	24980	24990	25000	25010	25026	
lambda NC_001416.1 (24090)		A	T	T	C	A	T	T	A	T	T	C
SARS-CoV-2 NC_045512.2 (18054)		A	G	G	A	C	-	-	T	C	T	A
Section 259												
	(25027)	25027	25040	25050	25060	25070	25080	25090	25100	25110	25123	
lambda NC_001416.1 (24182)		G	G	A	C	G	T	G	C	T	T	G
SARS-CoV-2 NC_045512.2 (18140)		A	A	A	C	T	-	-	-	-	-	G

## SARS-CoV-2 &amp; lambda.apr

												Section 260															
	(25124)	25124	25130	25140	25150	25160	25170	25180	25190	25200	25210	25220															
lambda NC_001416.1 (24276)		ATTT	GTAC	CCACCT	CCCCACCG	ACC	ATCTATGA	CTGT	ACGCCACT	GTCC	CTAGGA	CTGCTATG-TGCCG	GAGCG	GACAT	TACAAACG	TCCTTC	TCGGTG										
SARS-CoV-2 NC_045512.2 (18226)		AATT	A-TCA	AGTTAAT	GGTTACC	CTA----	A---CA	T---GT	T-TAT	CACCCG	GGAAG	AGCT	TATAA	GACAT	GTACG	TGCAT	GGA	TGGCT	TCGATG								
												Section 261															
	(25221)	25221	25230	25240	25250	25260	25270	25280	25290	25300	25317																
lambda NC_001416.1 (24372)		CATGCCAC	T-----	GT	TGCCAAT	GACCT----	G	CCTAGG	AATT	GGTTAGCAAG	TTAC	TA	CCG	GATTTT	GTAAA	AACAGCCCTC	CTCATA	TAAAAAGT									
SARS-CoV-2 NC_045512.2 (18311)		TCGAGGGG	TGTCAT	GCTAC	TAGA	GAGCTGTT	G	GTACCA	A	TTT-----	ACCT	TTAC	AG	CTAG	GTTTT	TCTA	AGG-TGTTAA	C----	TAGTTGCT								
												Section 262															
	(25318)	25318	25330	25340	25350	25360	25370	25380	25390	25400	25414																
lambda NC_001416.1 (24460)		ATTCGTT	C	TTCCG	ATAAGCG	TCGTAA	TTT	CTATCTTT	CAT	CAT	TATTCT	AGAT	CCCT--	CT	AAAAA	AATCTTCC	GAGT	TTGCTAGGC	ACTG	ATAC							
SARS-CoV-2 NC_045512.2 (18397)		GT--ACCT	AC	AGGTT	AT	GTTGA	TACACC	TAA	TAA	TA--	CAG	AT	TTT	TCCAG	AGT	TAG--TG	CTA	AA	CCGCTG	GAGATCA-----	ATTTAAAC						
												Section 263															
	(25415)	25415	25420	25430	25440	25450	25460	25470	25480	25490	25500	25511															
lambda NC_001416.1 (24555)		ATAAC	-TCTTTTCC	AATA	ATTGG	GGA	AGTC	ATT	CA	AAT	CTATAATA	G	GT	TCAG	ATT	TGCT	CAAT	AAAT	TC	TGAC	TGTAGCTG-CTG	AAACGT	TGCT				
SARS-CoV-2 NC_045512.2 (18482)		ACCT	CAT	TACCACTT	ATGT	ACAAA	GGA	CT	TC	TT	GGAAT	-G	TAGTGC	G	TAT	AA--	AGAT	TG	TAC---	AAAT	GT	TAG	TGACA	CAC	TTAA	AAATC	TCTC
												Section 264															
	(25512)	25512	25520	25530	25540	25550	25560	25570	25580	25590	25608																
lambda NC_001416.1 (24650)		---GGTT	GAAC	TAT	ATT	C	TTAT	AA-	CTTT	TACGAAA	GAGTT	TCTT	TG-	AGT	AA	TC	ACTT	CACTC	AA	G---TGCTT	CC-----	CTG	CCTCCAAACG				
SARS-CoV-2 NC_045512.2 (18573)		TGACAGA	GTCG	TAT	TGT	-CTTAT	GGG	CACA	T	GGCTTT	GAGTT	GACA	TCT	ATG	AA	GT	ATTT	TGTGA	AA	ATAGGAC--	CTGAGCG	CAC	CTGTTGTCTA				
												Section 265															
	(25609)	25609	25620	25630	25640	25650	25660	25670	25680	25690	25705																
lambda NC_001416.1 (24734)		ATACC	TGTTA	GCAAT	ATT	TAA	TAGCTT	GAAAT	GATGA	AG	AGCT	CTG	TGTT	TGT	CTT	CTG	CTC	CAG	TT	GCCGG	G	CATT	CAAC	CATA	AAAA	CTGATA	
SARS-CoV-2 NC_045512.2 (18667)		TGTGA	TAGAC	GTGCC	ACA	TGC	TTTTCC	ACTG	CTTCAG	AC	ACT	TAT	GC--	TGT	TGG	CAT-	CATT	CTAT	TG	GATTT	GAT	TACGT	CTAT	AA	TC	CGTT	TAT
												Section 266															
	(25706)	25706	25720	25730	25740	25750	25760	25770	25780	25790	25802																
lambda NC_001416.1 (24831)		GC	ACCCG	GAGT	TC	GGAA	AC	GAAA	TTT-G	CA	TA	TA	CC	ATTGCTCA	G	AAAA	AAA	AATGTCC	TTGTC	GATATAGG	GAT	GAA	TCGCTTGG	TGTAC	CTCA		
SARS-CoV-2 NC_045512.2 (18761)		TG	ATT--	GATG	TT	CAAC	AA	TGGG	TTT	TAC	AGG	TA	CC	TA-CAAAG	CA	ACC	ATG	ATCTGTA	TTGTC	A	GTCCAT	G	TAATG---	CACA	TGTAG	CTAG	

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Section 267											
	(25803)	25803	25810	25820	25830	25840	25850	25860	25870	25880	25899
lambda NC_001416.1 (24927)		-TCTAC	TGCGAAA	ACTTGACCTTTCTCTC	CCATAT	TGCAGT	CGCGGCACGATGG	AACTAAA	TTAATA	GGCATC-----	ACCGAAAATTCAGG-ATA
SARS-CoV-2 NC_045512.2 (18852)		TGTGTA	TGCAATCA	TGACTAGG----	TGTCTA-GC	TGTCCA	CGAGTGCTTTGT	TAA	GCGTGT	TTGACTGGAC	TATTGAATATCCTATAATTGGTGATG
Section 268											
	(25900)	25900	25910	25920	25930	25940	25950	25960	25970	25980	25996
lambda NC_001416.1 (25016)		ATGTGC	AATAGGA	AGAAAA	TGATCT--	ATATTT	TTTTGTCTGTCC	TATATC	ACCACANAATGG	ACATTTTTTC	ACCTGATGAAACAAGCATGTCA
SARS-CoV-2 NC_045512.2 (18944)		AAC	TGAAGATTAA	TGCGGCTTG	TAGAAAGG-TT	CAACA	CATGGTTGT	TAAAGCTGC	ATTATTAGCAGACAA	ATTCCCA	GTTCTT-CACGACAT
Section 269											
	(25997)	25997	26010	26020	26030	26040	26050	26060	26070	26080	26093
lambda NC_001416.1 (25111)		AAATAT----	GTTC	TAGCGG	GT	TGTTTTT	ATCTCGGAG	ATTATTTT	CA	TAAAGCTTT	CTAATTTAACCTTTGTCAGGTT
SARS-CoV-2 NC_045512.2 (19039)		AA	CCCTAAA	GCTAT	TAA	GTGT	TACCTCAAGCT	GATGTAGAAT	GGAAGT	TCTATGATGCAC	AGCCTTG--T-----AGTGACAAAGC-----T
Section 270											
	(26094)	26094	26100	26110	26120	26130	26140	26150	26160	26170	26180 26190
lambda NC_001416.1 (25202)		TGTAGGC	TCAAGAGGG	TGTGTCTCTG	TCGTAGGTAA	ATAACTGAC	CTGT	CGAGCT	TAAATAT	TCTATAT	TGTTGTCTTTCTGCAAAAAAGTGGGGGAAG
SARS-CoV-2 NC_045512.2 (19120)		TATAAAA	TAGAAGAAT	TATCTA--	TTC	TATAGCC	ACACA--TT	CTGAC	AAAT	TACAGAT	GGTGTATGCCTATTTTG-----GAATTGCA
Section 271											
	(26191)	26191	26200	26210	26220	26230	26240	26250	26260	26270	26287
lambda NC_001416.1 (25299)		TGAGT	AATGAAA--	TAT	TTCTAACATT	TATCTGCATC	ATACCT	TCCGAGCAT	TTTATTAAGCATTTTC	GCTATAAGTTCTCG	CTGGAAAGAGGTAGTT
SARS-CoV-2 NC_045512.2 (19203)		TGTCG	ATA	GATA	TCC	TGCTAA--	TTCCAT	TGT	TGTAGAT	T--TGAC	ACTA-----GAGTGCTATC-----TAACTTTAACTTGCTGCTGG
Section 272											
	(26288)	26288	26300	26310	26320	26330	26340	26350	26360	26370	26384
lambda NC_001416.1 (25393)		TTTT	TCATT	GTACTTTACCT	TTCATCT	CTGTTC	AT--TAT	CATCGC--	TTTTAA	ACGGT--	TCGACCTTCTAA
SARS-CoV-2 NC_045512.2 (19278)		TTGT	GAT-G	GTGGCAGTT	TGTATG	TAA--AT	AAACATG	CATTC	CACACACC	AGCTTT	TGATAAAAGTGCTTTTGT
Section 273											
	(26385)	26385	26390	26400	26410	26420	26430	26440	26450	26460	26470 26481
lambda NC_001416.1 (25484)		AGAA	TGGT	T-TC	ATAAGAAAG	CTCTG	AATCAA	CGGACTGC-GAT-	ATAAGTGGT	GGTATCC	AGAATTTGTCACTTCAAGT
SARS-CoV-2 NC_045512.2 (19371)		TTTC	TAT	TAC	TC	TGACAGT--	CCATG	TGA-GTCTC	ATG	AAAAACAAGTAGTG	CAGATATAGATT-----ATGTACCACTA

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## SARS-CoV-2 &amp; lambda.apr

												Section 281						
	(27161)	27161	27170	27180	27190	27200	27210	27220	27230	27240	27257							
lambda NC_001416.1 (26218)	AA---	AAGG--	A	TCAAATGC	ACTAAACG	AAA	CTGAAA	CAAGCGAT	TCGAA----	AATAT-CCCT	TTGGGATT--	CTTGACTCGAT	AAGTCTAT	TATTT				
SARS-CoV-2 NC_045512.2 (20102)	GTCTT	AATGGAG	TCACATTA	ATTGGAGA	AGCGT	AAAAACA	CAGTTC	AAATTATT	ATAAGAAAG	T--TGATGGTG	TT-GTC	CAACAA	TACCT	TGAAC				
												Section 282						
	(27258)	27258	27270	27280	27290	27300	27310	27320	27330	27340	27354							
lambda NC_001416.1 (26303)	TCAGAGAAA	-AATATTC	ATTGTTTT	CTGGTGGTG	GATTGC-	ACCAATC	ATTCATTC	CAAAATTG	-----	TTGTTT	TACACACCC	AT	TCCGCC					
SARS-CoV-2 NC_045512.2 (20196)	TTACTTT	ACTCAGAG	TAGAAATTTA	-CAAGAA	TTT-A-----	AACCA	GAGAGTCA	AAATGG	AAATTG	ATTTCT	TAGAA	TTAGC	TATG-G	ATGA----				
												Section 283						
	(27355)	27355	27360	27370	27380	27390	27400	27410	27420	27430	27440	27451						
lambda NC_001416.1 (26392)	GATAAA	AAGCATGA	ATGTTCTG	TGCTGGGCA	TAGAA	TTAACCGT	CACCT--	CAAAAG	GTAT-----	A-----	GTAAATCA	CTGAAT	TCCGGG	GAGCACTT				
SARS-CoV-2 NC_045512.2 (20280)	-----	ATT	CAT	TGA	A-CGG---	TATAAAT	TAGAA	GGCTATG	CGTTC	GAA	CATATC	GTATT	TATGGAG	ATTTTAGTCA	TAGTCAGT-TAGGTG-----	GT		
												Section 284						
	(27452)	27452	27460	27470	27480	27490	27500	27510	27520	27530	27548							
lambda NC_001416.1 (26477)	TTTCTAT	TAAATG	AAAAGT	GGA-AA	TCTGAC	AAATTC	TGGCAA	ACC--	ATTTAACAC	ACGTGC	GAACTGT	TCCATGA	ATTTCTGA	AAGAGTT	ACCCCTC			
SARS-CoV-2 NC_045512.2 (20362)	TTACATC	TA-----	CTGATT	GGA	CTAGCT	AAACGT	TTTAA	GGAATC	ACCTTTTG	AAT-TA	GAA	GATTTT	ATTCC	TATGGAC	AGTACAGT---	TAA		
												Section 285						
	(27549)	27549	27560	27570	27580	27590	27600	27610	27620	27630	27645							
lambda NC_001416.1 (26571)	TAAAGTA	-ATG	AGGTGTTA	AGGA-C	GCTTTCAT	-TTT-----	CAATG	--TCGGC	TAATCG	ATT	TGGCCAT	ACTACT	TAAATCCTG	AATAGCTTT				
SARS-CoV-2 NC_045512.2 (20448)	AAAC	TAATT	TCATA	-ACAG	ATGCG	CAACAGG	TTCA	TCTAAGT	GTGTGTG	TCTGT	TATGATTT	ATTACTTG	ATGATTT	TGTTGAAAT	A-ATAAAA	T		
												Section 286						
	(27646)	27646	27660	27670	27680	27690	27700	27710	27720	27730	27742							
lambda NC_001416.1 (26653)	AAG	AAGGTT	AT---GTT	TA	AAACATC	GCTTAAT	TGCTGAG	ATTAAC	ATAGTAGTC	AATGCTT	TACCTAAGG	AAAAAACA	TTTCAGG	GGA	-TT			
SARS-CoV-2 NC_045512.2 (20543)	CCC	AAGATT	TATCTG---	TA	GTTTCTAAG	GTG--T	CAAAGT	GAC---T	ATG	ACTATACAG	AAATTT	CATT-----	TATGC	TTTGGTGT	AAG			
												Section 287						
	(27743)	27743	27750	27760	27770	27780	27790	27800	27810	27820	27839							
lambda NC_001416.1 (26745)	GACTGA	ATT	TTTTATCT	ATTAAT	GAA	TAA	GTGCTT	CTTC-TT	CTTTT	GAC-CT	ACAAAAC	CAATT	TTAACA	TTT	CCGATATC	GCATTTTT	--C-A	
SARS-CoV-2 NC_045512.2 (20624)	ATGGCC	ATGT	-----	AG	AAAC	AT--T	TA	CCCAAA	ATTAC	AAT-CT	AGTCA	-AGCGT	GGAAC	CGGT	---GTT	GCT---	ATGCC	TA-ATCTTTA

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											Section 288										
	(27840)	27840	27850	27860	27870	27880	27890	27900	27910	27920	27936										
lambda NC_001416.1	(26837)	CCATGCTCATC	AAAGACAGT	AGATAAAA	CATTGTGTAAC	AAA-GGAATA	GTCATTCCAAC	CATCTGCTCGTAGG	AATGCCTTATT	TTTTTCTTACTG	CA										
SARS-CoV-2 NC_045512.2	(20703)	CAAATGCG	AAAGATGCT	ATTAGAAA	AGTGTGACCTTCAAA	ATTATG	GGTGATAGTG	CACACA	TTACCTA	AAAGGC	ATAATATGA	TGAAT-GTCG									
											Section 289										
	(27937)	27937	27950	27960	27970	27980	27990	28000	28010	28020	28033										
lambda NC_001416.1	(26933)	G--GAATATAC	CGCCTCTT	TCAATAACACT	AAACTTCC	AACATATAGT	TAACTTAATT	TATTAA	AAATAAC	CGCAATTTATT	TGGCGGCA	ACACAG									
SARS-CoV-2 NC_045512.2	(20792)	CAA-AATATAC	TCAACTGT	TCAATA	TTTAAACAC	ATTAAACAT	TAGCTGT	TAATATAG	AGTTAT	CATTTTGGTGC	TGGT	TCTGATAAAG									
											Section 290										
	(28034)	28034	28040	28050	28060	28070	28080	28090	28100	28110	28120	28130									
lambda NC_001416.1	(27028)	GATCT	-----CTCTTT	TAAAGTTAC	TCTCTATTACAT	TACGT	TTCCATC	TAA-AA-AAT	TAGTAGT	ATTGA	ACTTAA	CGGGC	ATCGTATTGTA								
SARS-CoV-2 NC_045512.2	(20888)	GAGTT	TGCACCAGGTACAGC	TG---	T-TTTAAGACAGTGG	TGCC	TACG--GG	TACGCTGC	TTGT	CATTCA	GATCTTAA	GACTTTG	TCTCTGATGC								
											Section 291										
	(28131)	28131	28140	28150	28160	28170	28180	28190	28200	28210	28227										
lambda NC_001416.1	(27113)	GTTTTC	CATATTTAGCTTT	CTGCTTCTCTTT	TGGATAAC	CACTGT	TATTCAT	GTTCAT	GGTGC	-----CTGT	TTATA	CCACGA	TATAGTCTTATT								
SARS-CoV-2 NC_045512.2	(20979)	AGATTTC	AACTTTGATTGG	TGATTGT	TCAAC	TGTACATA	CAGCTA	ATAAATGG	GATCTCATTATT	AGTGATA	TGTACGAC	CCTAAGA	CTAAAAATG--								
											Section 292										
	(28228)	28228	28240	28250	28260	28270	28280	28290	28300	28310	28324										
lambda NC_001416.1	(27205)	AAATGC	ATATATAGTATCG	CCGAACGA	ATTAGCTCTT	CAG-GCTT	CTGAAGAA	CGTTTCA	AGTACTA	----ATAAG	CCGATAG	ATAG	CCACGGACTTC								
SARS-CoV-2 NC_045512.2	(21074)	-TTTACA	AAAGAA-ATGAC	TCTA--AAG	AGGGTT	TTTTCACTT	ACATTTGT	GGTTTATA	CAACAA	AAGCTAGCT	CTTGG	AGGT-T	CCGTGGCTATA								
											Section 293										
	(28325)	28325	28330	28340	28350	28360	28370	28380	28390	28400	28410	28421									
lambda NC_001416.1	(27297)	GTAGCC	ATTTTTCAT	AAGTGTTAA	CTTCCGC-T	CCTCGCTCAT	ACAGAC	-ATTCACTACA	GTATATGGC	GGAAGGT	ATGCA	TGCGGTGT	GGGGGA								
SARS-CoV-2 NC_045512.2	(21166)	AAGATA	ACAGAA	CATCTCTG	-GAATGCTGATC	TTTATAAG	CTCATGG	GACAC	TTCGAT--GGT	TGGACAG	CCCTTTGT	TACTA	ATGTGAA-----								
											Section 294										
	(28422)	28422	28430	28440	28450	28460	28470	28480	28490	28500	28518										
lambda NC_001416.1	(27392)	AGTCGT	GAAAG----	AAAGAAGT	CAGCTG	CTGCTTTG	ACATCACTGC	TATCTT	CTTACT	GTGTTAT	GAGGTCGTAG	TGGGTGGC	ACACAAAGCTT								
SARS-CoV-2 NC_045512.2	(21252)	-TGC	CGTCATCATCTG	AAGCATT	TTA-ATTG	-----ATGTAAT	TATCTT	GGCA	AAACCACGC	GACAAATAGA	TGGT	---	ATGT----CAT								

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												Section 295										
	(28519)	28519	28530	28540	28550	28560	28570	28580	28590	28600	28615											
lambda NC_001416.1 (27485)		TGCACTG-G	ATTG	CGAGGC	TTTGT	GCTTCTCTGG	AGTGCGA	CAGGTT	GATG	ACAAAAAATTAG	CGCAAGAAGACAAAATCACCTTTGGCGCTAATGC											
SARS-CoV-2 NC_045512.2 (21330)		GCATGC-AA	ATTAC	CATATT	TTGGAG	GAA-----T	ACAAATC	CAATT	CAGTTG	-TCTTCCT-ATTCT-TTATTTGAC	ATGAGTAAATTTCCCTTAAA											
												Section 296										
	(28616)	28616	28630	28640	28650	28660	28670	28680	28690	28700	28712											
lambda NC_001416.1 (27581)		TCTGTTACA	GGT	CACTAA	TACCA	TCTAAGT	AGTT	GATT	CATAGTGA-CTG	CATATGTTGTGTTTTACAG	TATTATGTAG-TCTGTTTTTTATGCAAA											
SARS-CoV-2 NC_045512.2 (21418)		TTAAGGG--	GTA	CTGCTG	TATG	TCT	TTAA	--	AGA	AGGTCA	AATCAA	TG	ATATG-----	ATTTTATCTCTTCT	TAGTTAAAGGTAGAC							
												Section 297										
	(28713)	28713	28720	28730	28740	28750	28760	28770	28780	28790	28809											
lambda NC_001416.1 (27676)		ATCTAATT	TAA	ATATTTG	ATATTTATATCA	TTT	TACGTT	TCTCG	TTCAG	CTTT	TTTATACTAAGTTGGC	ATTATAAAAAAGCATTGCTTATCAATTTT										
SARS-CoV-2 NC_045512.2 (21497)		TATAAATT	AGAGA	-----	AAACAACAGAGT	TGTTA	TTTCT	AGTG	ATGTTCTT	GTTAA	CA	AACT--AAACG	AACA	ATGT-----	TGTTTTT							
												Section 298										
	(28810)	28810	28820	28830	28840	28850	28860	28870	28880	28890	28906											
lambda NC_001416.1 (27773)		GTTGCAACGAACAGGTCAC	TATCA	GTCAA	ATA	AAATC	ATTATTTGA	TTTCAAT	TTTTG	TCCCA	CTCCCTG	CC-TCTGTC	ATCAC	GATACGTGTGATGC								
SARS-CoV-2 NC_045512.2 (21575)		CTT-----	GTT	TATTG	GC--	CAC	TAGTC	TC	TAGTCAGTG	T--GT	TAA	CTT	TACA	----AC	CAGAACTCAATTACCCCCTGCATACA							
												Section 299										
	(28907)	28907	28920	28930	28940	28950	28960	28970	28980	28990	29003											
lambda NC_001416.1 (27869)		CATGGTG	TCCGA	CTT	ATGCCCG	AGAA	GATGTTGAGCAA--	AC	TTATC--	GCTTAT-CTG	CTTCTCATAGAGT	CTTG	CAGACAACTGCGCAACTCG									
SARS-CoV-2 NC_045512.2 (21648)		C-----	TAA	TT	CTT	T-----	CACAC	G	T-----	GGTGT	TTAT	TACC	CTG	ACAAAGTTTCAG-ATCCT--	CAGTTTTACATTC-----A							
												Section 300										
	(29004)	29004	29010	29020	29030	29040	29050	29060	29070	29080	29090	29100										
lambda NC_001416.1 (27960)		TGAAAGGTA	GGCGGATCC	CCTTCG-	AAGGAAAGACCTGA	TG-	CTTTTC	G-----	TGCGCG	CATAAA	ATACCT	-TGATACT	GTG	CCGGATGAA								
SARS-CoV-2 NC_045512.2 (21713)		ACTCA	A----	GGACTTGTT	CT----	TA	-----	CC	TTT	CTTTTC	CAATGTTACT	TGGTTC	CATGCT	ATACATGTC-TCTGGGACCAATGTAC								
												Section 301										
	(29101)	29101	29110	29120	29130	29140	29150	29160	29170	29180	29197											
lambda NC_001416.1 (28045)		GCG	GTT	CGCGAC	GAG	TAGATGCAAT	TA	TGGTT	TC	FCC	GC	CAAGAATC	CTT	TGC--A	TTTATCAA	GTG	TTT	CCT	TATTGAT	ATTC	CGA-GAGCAT	
SARS-CoV-2 NC_045512.2 (21790)		TAA	GAG-----	GTT	T-----	GAT	TA	ACCC-	TG	FCC	TAC	CA	TTTAA	TGAT---	GGTG	TTTAT	TTT	GC-	TT	CAC	TAG----	AAGTCTAACATAAT

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	(29198)	29198	29210	29220	29230	29240	29250	29260	29270	29280	Section 302										
lambda NC_001416.1 (28138)	C	AATATGC	AATGCTGT	TGGGAT	TGGCAATTTTTAC	GCGCTGTTT	TGCTTGCT	TGCTGACATAAAGA	TATCCAT	TCTACGATATC	-AGAC-CACTTCATTTC	G									
SARS-CoV-2 NC_045512.2 (21865)	-	AAAGAGGC	TGGATTT	TTGGTACTA	CTT-----	-----	-----	TAGATTTCGAAGA	CC-CAGT---	CCC	TACTTATTGTTAATAA--CG	CT									
	(29295)	29295	29300	29310	29320	29330	29340	29350	29360	29370	Section 303										
lambda NC_001416.1 (28233)	C	ATAAAT	CACCAAC	TCGTTGCC	CGGTAA	CAAAG--CCA	GTTC	CATTCAGTCTG	AGCCAACA	TGGTG	TGATGATTCTGC	TGCTTGATAAATTTTC	AG								
SARS-CoV-2 NC_045512.2 (21932)	-	ACTAAT	GTTGTTA	TAAAAGT	CTGTG	AAATTTCA	ATTTT-GT	AATGATTC	CAT-----	TTT	TG--G-----	G	TGTTAT-TACCACAAA								
	(29392)	29392	29400	29410	29420	29430	29440	29450	29460	29470	Section 304										
lambda NC_001416.1 (28328)	G	TATTCGTC	AGCCGTA	AGTCTTG	-ATCTCCT	TACCTCTGAT	TTTGCT	GCGCG-AGT	GGC--AG	C	GACATGGTTT	TGTGTGT	TATATGGCCTT	CAGCTAT							
SARS-CoV-2 NC_045512.2 (22005)	AC	AACAA-A	AGTTGGA---	TGGAAGT	GAGTT	CAGAGTTAT	-TCTAGT	GCGAATA	AATTGCA	CTTT--T	GAATAT	TGCTCTCA--G	CTTTTCT	TA							
	(29489)	29489	29500	29510	29520	29530	29540	29550	29560	29570	Section 305										
lambda NC_001416.1 (28421)	TG	CCTCT	GGAATGC	ATCG--CTC	AGT-GTTG	A	CTGATTTA	ACTTGGC--TG	ACGCCGCCT	TGCCCTC	GTC	TA-TGTA	TCCAT	TGAGCATT-GC	CG						
SARS-CoV-2 NC_045512.2 (22092)	TG	GACCTT	GAGGAAAC	CAGGGTA	ATTTC---AA	AAATCTTA	GGAATTTG	TGTT-TA	AGAAATATT	GATGGTTAT	TATTTTA	AAATATATTT	CTAAGCA								
	(29586)	29586	29600	29610	29620	29630	29640	29650	29660	29670	Section 306										
lambda NC_001416.1 (28510)	C	AATTTCTTTT	GTGGTGA	TGTCTTCAAG	TGGAGCAT	GAGGCA	GACCCCTCCT	TATTG	CTTTAATTT	TGCTCA	TGTAATTTAT	GAGTG	TCTTC	TGCTT							
SARS-CoV-2 NC_045512.2 (22185)	C	GCC---T	ATTAA--TT	TAGTGC	TGATC---TCC	CTCAGG	GTTTTTCGGC	TTTAGA	ACCATTGGT	TAGATT	TGCC-AA	TAGGTAT	TAACA	TCAC	T						
	(29683)	29683	29690	29700	29710	29720	29730	29740	29750	29760	Section 307										
lambda NC_001416.1 (28607)	GAT	T	CCTCTGCT	TGGCCAG	GATTTTT	TTTCGTAGCG	ATCAAGCCA	TGAAT	GTAACGT	AACGGAA	TTATCAC	TGTTGATTC	TGCTG	TGCAG	AGGCTTGTGT						
SARS-CoV-2 NC_045512.2 (22271)	AGG	TTTCAAA	CTTTACTTG	-CTTT	TACAT--AGA	AGTT--ATT	TGA	CTCCTGGTG	ATTCTTC	TT	CAGGT	TG	GACAGC	-TGG-TG	CTGCA--GC	TTAT					
	(29780)	29780	29790	29800	29810	29820	29830	29840	29850	29860	Section 308										
lambda NC_001416.1 (28704)	T	TGTGT	TCC	TGAAAA	TAACTCA	ATG-TTGG	--CCGT	ATAGCT	TCAGT	GATTGCGAT	T	CGC-C	TG	TCTCT	TGCCTA	ATCCAA	ACTCTTT	AC	CCGT	C	CTT
SARS-CoV-2 NC_045512.2 (22359)	A	TGT	-GGG	TATCT	TCAAC	CTAGG	ACTTTTCTAT	TAAAA	TAT---A	-----	-AT	GAAAA	TG	GAAC	CATTAC	AGATGCT	-GT-AG	ACTGTG	C---		

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															Section 309																													
	(29877)	29877	29890	29900	29910	29920	29930	29940	29950	29960	29973																																	
lambda NC_001416.1 (28797)		GGGTCCCTGTAG	CAGT	AATA	TCAT	T--	GTTT	CTT	AATA	AA	GGTT	AGG----	G-GG	TAA	ATCCCGGC	GCTCATG	ACT	TCG	C	-	CTTCTTCCC	AT																						
SARS-CoV-2 NC_045512.2 (22438)		-----	A	CTTG	ACCC	TC	T	-	CA	GAAA	CAA	AGT	GT	AC	GT	TGA	AAT	CCT	T	CAC	TGT	AGAAA--	AAGGA--	AT	CT	TAT	CAAACT	-----	T-															
															Section 310																													
	(29974)	29974	29980	29990	30000	30010	30020	30030	30040	30050	30060	30070																																
lambda NC_001416.1 (28885)		CTGATCCT	CTT	CAA	AAGG	CC	ACC	TGTT	ACT	GGTC	GAT	TT	TAA	GT	CA	ACCT	TT	CC	GCT	GAT	TCGT	GG	AAC	AGA	TACT	CT	CTT	CCA	-	TCCT	TAA	CC	GGA											
SARS-CoV-2 NC_045512.2 (22509)		----	CTAA	CTT	TAG	AGTC	CA	ACC	AA	-	CA	GAAT	CTAT	TGT	TA	-----	GAT	TT	CC	TAAT	--	ATTACA	AAC	T--	TGTG	CC	CTT	TTGG	-----	TGA														
															Section 311																													
	(30071)	30071	30080	30090	30100	30110	30120	30130	30140	30150	30167																																	
lambda NC_001416.1 (28981)		GGTGGG	AA	TAT	C	TG	CAT	T	CCCG	AAC	CA	T	CG	AC	GAA	CT--	GTTT	CA	-	AGG	CTT	CT	TG	--	AC	GTC	G	TG	GC	GT	GC	GT	T	CAC	TCCT	GA	AGT	GT	CAA					
SARS-CoV-2 NC_045512.2 (22583)		GT	TTTT	AA	CGC	C	ACC	GAT	TT	TG	C	A	T	-	CTG	TT--	TATG	CT	TG	AAC	AGGA	AG	AGAA	T	CAG	CA	AC	TGT	GT	TG	CT	GAT	-	TAT	CTG	TCCT	AT	ATAA	TT	C-				
															Section 312																													
	(30168)	30168	30180	30190	30200	30210	30220	30230	30240	30250	30264																																	
lambda NC_001416.1 (29073)		GTACAT	CGCAA	AGT	CT	CCG	CA	ATT	A	CAC	G	CA	A	GAA	AAA	ACCG	GCAT	C	AGG	CGGC	TT	GGT	GTT	CTTT	CAG	T	CTT	CA	AT	TC	GAA	T	ATT	GGT	T	ACGT	CT							
SARS-CoV-2 NC_045512.2 (22675)		--	CGCAT	CATTTT	C	A	TTTT	A--	AGT	-	GTT	A	TGGA	--	GTGT	CT	-	C	TACT	AAA	TT	AAAT	-----	GAT	-----	C	T	G	CT	T	TACT	AA	T	GTC	-	TA								
															Section 313																													
	(30265)	30265	30270	30280	30290	30300	30310	30320	30330	30340	30350	30361																																
lambda NC_001416.1 (29170)		GCAT	GTG	CT	AT	CTG	CGCC	ATA	T	CA	T	CC	A	G	T	CG	GT	AG	TC	GT	TGAT	GTT	CT	CCG	CTT	CG	AT--	-	AA	CT	CTG	T	TG	AAT	GG	CT	CT	CC	ATT	C	ATT			
SARS-CoV-2 NC_045512.2 (22750)		TGCA	G	ATTC	ATT	TG	TAATT	AG	AG	GT	GAT	-	GAA	GTC	AGA	CA	AA	TC	G	CT	CC	AG	GG	C	AA	ACT	TGG	-	AA	AG	ATT	G	CT	GAT	TAT	AAT	TATA	AA--	-	TT	A	C	CAG	
															Section 314																													
	(30362)	30362	30370	30380	30390	30400	30410	30420	30430	30440	30458																																	
lambda NC_001416.1 (29264)		CTCC	TGT	G	ACT	CGGA	AG	TGC	ATTT	TAT	CAT	CT	CC	A	TAAAA	CA	AA	CC	G	CCG	T	AG	C	GA	G	TT	CAG	ATA	AA	A	TAA	T	ATCC	CC	GC	G	AG	TG	CGA	G	GA	T	TGT	TA
SARS-CoV-2 NC_045512.2 (22842)		AT	GAT	TT	TT	A--	-	CAGG	C	TGC	G-----	T	TATA	--	GCT	TGG	AA	TT	C	TA	ACA	AT	CT	TG-----	-	ATT	C	TA	A	G	GT	TG	GT	G	T	GA	T	TA	TA					
															Section 315																													
	(30459)	30459	30470	30480	30490	30500	30510	30520	30530	30540	30555																																	
lambda NC_001416.1 (29361)		TGTAAT	ATT	GGG	TT	TA	AT	CAT	CT	AT	AT	GTTTT	TG	TAC	AG	AG	AG	GGC	AA	GT	AT	CGTTT	CC	ACCGT	A	CT	CG	T	GATA	ATA	ATTT	TG	CAC	GGT	AT	C	AG	TCA	-					
SARS-CoV-2 NC_045512.2 (22911)		-----	ATT	ACC	TG	TA	TATA--	-	GAT	TGT	-----	TT	-	AG	GA	AG	TCT	AA	TCT	CAA	ACCTTTT	T	GAG	AGAGAT	-----	-	ATTT	CA	ACT	GAA	AT	C	TA	TCA	G									

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												Section 316																																	
	(30556)	30556	30570	30580	30590	30600	30610	30620	30630	30640	30652																																		
lambda NC_001416.1 (29457)		TTTCTCGCACATTGCA	GAA	TGGGGATT	TGT	CTTCAT	TAGACT	TATAA	AC	TTCAT	TG---	GAA	TAT	TGTAT	TGCCGA	CTCTAT	ATCT	AT	ACCT	T	CATC																								
SARS-CoV-2 NC_045512.2 (22985)		GCCGGTAGCACACCTT	GTA	--AT-G-G	TGT	TGAAGG	TTTAA	TGTT	AC	TTC	TTTACA	ATC	AT	TG	GT	TT--C	CAACCC	ACTA	AT	GGTG	TGGT																								
												Section 317																																	
	(30653)	30653	30660	30670	30680	30690	30700	30710	30720	30730	30749																																		
lambda NC_001416.1 (29551)		TACATAA	ACAC	CTT	CGTGAT	TGTCT	GCA	TGGAGACAAGAC	AC	GGAT	CTGCA	CA	CATT	GAT	AAC	GCCCAATCTTT	TGCTC	AG	CTC	TA	ACTCA	TTG																							
SARS-CoV-2 NC_045512.2 (23075)		TA---	CC	AAC	CAT	CAGAG	TAGTA	GTA	CTT	-TCTTT	-TGA	ACT	TCT	TACATG	CAC	CA--	GCA	ACT	G	TTTGTGGACC	TAA-AA	AGT	C--	TACTAAT	TTG																				
												Section 318																																	
	(30750)	30750	30760	30770	30780	30790	30800	30810	30820	30830	30846																																		
lambda NC_001416.1 (29648)		ATACTCA	TTT	ATA	AACTCCTTGCAA	TG	TATGTCGTT	TCA	GCT	TAA	CGG	TATCAG	CAA	TG	TTTAT	GTA	AAGAAACAG	TAA	G	ATAATAC	TCA	AC	CGA	T																					
SARS-CoV-2 NC_045512.2 (23162)		G-----	TTA	AAAA	CA-----AATG	TG	-----	TCA	AT	TTCA	ACT	TCAAT	G	--	TTT	AACAG	GCA	CAGGT-GT	TCTT	ACTGAG-	TCT	AAC	AAA	A																					
												Section 319																																	
	(30847)	30847	30860	30870	30880	30890	30900	30910	30920	30930	30943																																		
lambda NC_001416.1 (29745)		GT	TT	GAGTACG--	GTC	AT	CAT	CTGACACTA	CAGA	CT--C-TGGC	ATCGCTG	TGA	AG	AC	GA	CGCGAA	---	ATT	CAG	CA	TTT--	TCA-CAAG	CGTTA	TC																					
SARS-CoV-2 NC_045512.2 (23235)		AG	TT	--TCTGCCTT	TC--	CAACA	ATTTG-G	CAGA	GACATTGCTG	ACACTAC	TGAT	G	CTGT	C	CGTGA	TCC	ACAG	ACAC	TT	GAGATTCTTGAC	ATT	A	C	-																					
												Section 320																																	
	(30944)	30944	30950	30960	30970	30980	30990	31000	31010	31020	31030	31040																																	
lambda NC_001416.1 (29831)		TTTT	AC	AAA	AACCGA	TCT	CACTCT	T	CCTTTGA	TGCG	AA	TG	CCAG	CGT	C--	AGAC	AT	CA	TATG	CAGATACT	TCA	C	TG	CATCC	TGA	ACCCATTGA	C	CTCCA																	
SARS-CoV-2 NC_045512.2 (23326)		----	AC	CA	TGTTCT	TTT	TGGTGG	TG	TCAGTG	T	TAT	AA	CA	CCAG	GAA	CA	T	ACT	TCTA--	AC	CAG--	G	TTG	C	TG	TTC--	TTT--AT----	C-AGGA																	
												Section 321																																	
	(31041)	31041	31050	31060	31070	31080	31090	31100	31110	31120	31137																																		
lambda NC_001416.1 (29926)		ACCCCGTAAT	AGC----	G---	ATG	--CG	TAA	T	GATG	TC	GAT	AGTTACTAA	CGGGTC	T	T	GTT	CG	AT	TAA	T	G	CCG	CAG	AAA	CT	CT	TCCAGG	TCA	CCAG																
SARS-CoV-2 NC_045512.2 (23404)		TGTTAACTGC	AC-AGAA	G	TCCC	TG	TTGC	TAT	T	CATG	CA	GAT	CAACTTACT	C	TACT	TGG--	CG	TG	TTTAT	T	CTA	CAG	GTT	CT	AA	TGTTTT	TCA	AACA																	
												Section 322																																	
	(31138)	31138	31150	31160	31170	31180	31190	31200	31210	31220	31234																																		
lambda NC_001416.1 (30014)		T	G	CAGT	G	CT	TG	A	TAA	C	AGGAGTCT	TCC--	CAG	G	A	TGGCGAA	CAAC	AAGA	AACT	GG	T	T	CCGTC	T	T	CACGGACTT	C	G	TTG	C	T	T	T	-CCAGT	T	T	A	G	CAAT						
SARS-CoV-2 NC_045512.2 (23498)		C	G	TGCAG	G	C	TG	T	--TA	-----	T	AGGGGCT	G	A	CA	-TGT	CAAC	----	AACT	C	A	T	A	T	G	-A-G	T	G	TGACATACC	C	A	T	T	G	T	G	-CAGGTAT	T	A	T	G	C	G	C	T

## SARS-CoV-2 &amp; lambda.apr

												Section 323																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	(31235)	31235	31240	31250	31260	31270	31280	31290	31300	31310	31320	31331																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
lambda NC_001416.1 (30108)		-ACGC	TTA	CTCCCA	TCC	GAGAT	AACAC	CT	TCC	TAATA	CT	CACGCTGCTCGT	T	GAG	TTT	TG	AT	TTT	GCTGTTTC	A	AGCT	CA	ACAC	GCA	GT	TTT	C	CC	TAC																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
SARS-CoV-2 NC_045512.2 (23579)		A---	G	TTA	TCAGAC	TC	AGA	CTA	A	ATTCT	C	TCC	GCGGG	CA	G	TAG	----	TG	T	AGC	T	AG	T	CA	T	CCATC	----	A	TTGC	CT	ACAC	TAT	GT	CA	CT	--	TG																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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	(31332)	31332	31340	31350	31360	31370	31380	31390	31400	31410	31428																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
lambda NC_001416.1 (30204)		TGTT	AG	CGCAAT	A	TCC	T	CGTTCT	CT	CT	GGT	CG	GCGGTTT	TG	A	T	TGCT	T	GGTTTCTTT	C	CGT	T	CATCC	A	G	T	TCCAGCACAAT	C	G	A	T	G	T	G	T	T																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
SARS-CoV-2 NC_045512.2 (23661)		GTGC	AG	-----	A	AAA	T	T	CAGT	T	G	CT	-	T	A	CT	C	TAATAACT	CT	A	T	TGCCA	T	A	CC	-----	A	C	AA	T	TTT	-	T	A	CT	A	T	A	G	----	TGTTA	CC	ACA	G	AA	A	T																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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	(31429)	31429	31440	31450	31460	31470	31480	31490	31500	31510	31525																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
lambda NC_001416.1 (30301)		A	C	CA	ATTCA	TG	GAA	A	AGGT	CT	GC	G	T	CA	AATCCCC	A	G	T	CG	----	T	C	A	T	G	C	A	T	T	G	C	A	T	T	G	C	T	C	T	C	G	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C

## SARS-CoV-2 &amp; lambda.apr

Section 330																																			
	(31914)	31914	31920	31930	31940	31950	31960	31970	31980	31990	32000	32010																							
lambda NC_001416.1 (30758)		AAATGA	GTCGG	TGTGAAT	CCATC	AGCGT	TACCGTT	TCGC	GGTGCT	TCTTC	AGTAC	GCTAC	GGCA	AAT	GTCATCGACGTT	TTT	ATCCG	GAA	ACTGCT																
SARS-CoV-2 NC_045512.2 (24165)		AAATGA	TT--G	-----	CTCAAT	ACAC	T-----	T-CTG	CACTGT	TT---	AGC-G	GGTAC	AATC	ACT	TCTGTTTGGACC	TTT	G--GT	GCA	G----	G															
Section 331																																			
	(32011)	32011	32020	32030	32040	32050	32060	32070	32080	32090	32107																								
lambda NC_001416.1 (30855)		GT	CTG	GCTTT	TTTTTTG	ATTT	CAGAATT	AGCCTG	ACG	GGC	AATGCT	GCGA	AGG	GCGT	TTTCCTGCTG	AGGTGTCA	TTGAAC	AAG	TCCCATGTC	-GGCA	A														
SARS-CoV-2 NC_045512.2 (24235)		TG	CTG	CA	TTA--	CAA	ATAC	CA	TTTGCTATG	CA	AAT	GGC	TTATAG	GTTT	AAT	GTA	TTGGAGTTAC	ACAGAATG	TTCTCT	AT	GAGA	ACCA	AAAA	ATTG	A										
Section 332																																			
	(32108)	32108	32120	32130	32140	32150	32160	32170	32180	32190	32204																								
lambda NC_001416.1 (30951)		GCATA	AGCAC	AC-AG	AATA	TG-A	AGCCCGCT	GCCAG	AAAA	AAT	GCAT	TT	C	CGTGGT	TGTCAT	ACC	TGGT	-TT	CTCTC	ATCT	TGCTTC	TG	CTTT	CG	C	ACC									
SARS-CoV-2 NC_045512.2 (24330)		TTGCC	AAC	CA	ATTTA	ATAG	TGCT	A	TTGGCAAA	ATTC	AA	GACT	CAC	TTT	C	--TTCC	ACAGC	AAG	TG	CAC	TT	GGAAA	ACT	TCA	AAG	TGT	--GGT	CA	ACC						
Section 333																																			
	(32205)	32205	32210	32220	32230	32240	32250	32260	32270	32280	32290	32301																							
lambda NC_001416.1 (31045)		ATC	AT	TTC	CAG-	CTTT	TGTGA	AAAGG	GAT	GCGG	CTA	ACGTA	--TG	AAA	-TT	CT	T	CGTC	TG	TTCTACTG	GT	ATTGGCAC	AA	AC	CTGAT	TT	CA	AT	TTG	-					
SARS-CoV-2 NC_045512.2 (24423)		AAA	AT	GCA	CA	AG	CTTT	AAAC	ACGCT	TG	TAAAC	CA	CTTAG	CTCC	AA	TT	TT	GGT	TG	CAAT	TT	CA	--AGT	GT	TT	TAAT	GAT	AT	C	CTT	T	CA	CGTC	TTG	A
Section 334																																			
	(32302)	32302	32310	32320	32330	32340	32350	32360	32370	32380	32398																								
lambda NC_001416.1 (31137)		-AGCA	AG	GCTAT	GT---	GC	CATCT	TC	GAT	--AC	T	CGT	TC	TTA	--CT	CAACAG	AAG	-----	ATGC	TT	TG	TGCAT	ACA	G-----	CCC	CT	CGTTT								
SARS-CoV-2 NC_045512.2 (24517)		C	AAAGTT	GAGGCT	GAAGTG	CAAA	T	GAT	AGGT	TG-A	TC	AC	AGGCAG	ACTTCA	AAG	TTTGCAG	ACATA	TG	TG	ACTCA	ACA	ATTAATTAGAG	CT	GCAG	A										
Section 335																																			
	(32399)	32399	32410	32420	32430	32440	32450	32460	32470	32480	32495																								
lambda NC_001416.1 (31211)		ATT	ATTTAT	CTCCTCA	GC	CAGC	GCTG	TGCT	TTCA	----	GTG	GAT	TT	TC	G	ATAACAG	AA	GGCCGGGA	AA	TATCC	CAGCC	TCGCT	TTT	G	TAAC	G	AGT								
SARS-CoV-2 NC_045512.2 (24613)		AAT	CA--	GAGCTTCT	-GCT	AAT	CTTGC	TGCT	ACT	AAAAT	GTCA	GAGT	TGT	G	T	ACTTGGAC	AA	TCAAAAAG	AG	-----	TTG	ATTT	T	TGTG	GAA	AG									
Section 336																																			
	(32496)	32496	32510	32520	32530	32540	32550	32560	32570	32580	32592																								
lambda NC_001416.1 (31303)		AGA	C	GAA	AGTGAT	TGCGCCT	ACCCGGATATTA	TC	GTG----	AGGATGCG	T	CAT	CGCCAT	TG	CT	CC	CAAATACAAA	ACCAATT	T	CAG	C	AGTGCCTC													
SARS-CoV-2 NC_045512.2 (24698)		G-G	C--	T	ATCATC	TTATGTCCT	-----	TCCC	TC	AGTCAGC	ACCTCA--	TGGT	G	TAGTC	TT	CT	TG	CATGT	-GACTT	A	TGTCCC	TGCA	CA	AGAA--	AA										



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												Section 337					
	(32593)	32593	32600	32610	32620	32630	32640	32650	32660	32670	32689						
lambda NC_001416.1 (31396)		GTCCA	TTTTTCGATGAACT	CCGGC	CACGATCTCTG	TCAAACT---	CGGCATGTACT	TTTTC	A--TCC----	CGCTCAA	TCACGACA-T	AATGCAGGC					
SARS-CoV-2 NC_045512.2 (24781)		-GAAC	TTTCA	CAACT--GCTC	CTGC	CATT-TGTC	ATGATG	GAAAAG	CACACTTTTC	CTCGTGA	AGGTGTCTTTGTT	TCAAATGGCACAC-AC	TG--GTT				
												Section 338					
	(32690)	32690	32700	32710	32720	32730	32740	32750	32760	32770	32786						
lambda NC_001416.1 (31482)		CTT	CACGCTT	CATACGCGGG	TTCAT	AGTTGGC--AA	AGTAC	CAGGC	ATTTTTCGCGT	CACCACATGCTGT	ACTGCACCTGG	GCCAT	GTAAAGCTGAC				
SARS-CoV-2 NC_045512.2 (24871)		TGTA	ACACAA-	AGGAATTTT	TATGA	AACCACAAATC	AT	TACTACAG	ACAACACATTTGTGT	CTGGTA----	ACTGTGATGTT	GTAA-----	TAGGA				
												Section 339					
	(32787)	32787	32800	32810	32820	32830	32840	32850	32860	32870	32883						
lambda NC_001416.1 (31577)		TTT	TATGGCCT	CGAAACCACCGAGC	CGGAAC	TTT	CATGAAATCCCGG	GAGGTAAAC	CGGGCAT	TTTC--	AGTTCAAGGCC	GTG	TGCC---GTCACTGCAT	AA			
SARS-CoV-2 NC_045512.2 (24957)		TT	GTCAA	CACAC-	AGTTTATGAT	CC---	TTTGCAACCTGA	ATTAGAC-----	TCAT	TCAAGG	AGG---	AGTTAGATAA	ATATTTTAAGAATCA	T			
												Section 340					
	(32884)	32884	32890	32900	32910	32920	32930	32940	32950	32960	32970	32980					
lambda NC_001416.1 (31669)		AC	CATC	GGGAGA	GCAGGCGGG	TACGCAT	ACT--	TTCGTG	CGGATAGAT	GATCGGG	GGATT	CAGTAACAT	-TCA	CGC-CGGAAGTGAAT	TCAAACAGGGT		
SARS-CoV-2 NC_045512.2 (25040)		-A	CATC	ACCAGA	-TGTTGAT	TAGGTG	ACATCTCT	GCGATT	AATGCT	TCAGTTG	TAAACAT	TTCAAA	AAGAAATTG	ACCGCC	TCAATGAGGTTGCCAA		
												Section 341					
	(32981)	32981	32990	33000	33010	33020	33030	33040	33050	33060	33077						
lambda NC_001416.1 (31762)		TCT	GG-CGTCGTTT	TCGTACT	GTTC	CCCAGG	CCA	GTGCTTTAG	CGTTA	ACTTC	CG-G	AGCCACACC	GGTG	CAAACTCAGCA-A	GCAGGGTGTGG		
SARS-CoV-2 NC_045512.2 (25135)		---	GAAT--TTAAA	TGAATCTCT	CACTC	-GATCT	CCA	AGAAC	TTTG	AAAGT	ATGAG	CAGTATATAA	AAATGG--	CCATGGTACATT	TGGCTAGGGTTT	TA	
												Section 342					
	(33078)	33078	33090	33100	33110	33120	33130	33140	33150	33160	33174						
lambda NC_001416.1 (31856)		AAGTA	GGAC--	ATT	TTT	CATGT-CA	GGCCACTTCT	TTCC	GAGCGGGG	TTTT	GCTAT	CACGTTGTGAA	CTTCT	GAAGCGG	TGATGA	CGCCGAGCCG	TTA
SARS-CoV-2 NC_045512.2 (25224)		TAGCT	GGCTTG	ATTGC	CATAGTA	AAT-GGTGACAA	TTATG	CTTT-----	GCTGT	ATGACCAGTTG	CTGTAG	-----	TTGTCT	CAAGG	CGCTGTG	T	
												Section 343					
	(33175)	33175	33180	33190	33200	33210	33220	33230	33240	33250	33260	33271					
lambda NC_001416.1 (31950)		A	TTTGTGCCAC-G	CATCAT	CCC	CTGTT	CGA	CAGCTCTC	ACATCGAT	CCG	G	TACGCTGCAGGATAA	TGTCC	GG-TGTC	ATG--	CTGCCAC	CTTCTGTG
SARS-CoV-2 NC_045512.2 (25306)		T	TCT-TGTGGATC	CT--G	CTG	CAAA	TTTGA	TGAAGACG	ACT-----	CTGAG	---C	AGT-----	GCTCAAA	GGAGTCA	AATTA	CATTACAC	ATAAA

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												Section 344				
	(33272)	33272	33280	33290	33300	33310	33320	33330	33340	33350	33368					
lambda NC_001416.1 (32043)		CTCTGCGGCTTTCTGT	TTCTAGGA	ATCTCAAGAG	CTTTTACTGCTTC	GGCCTGTG	TTCAGTT	CTGACG	ATGCACGA	ATGTCGCG	GGCGAAATA	TC	TGGGA			
SARS-CoV-2 NC_045512.2 (25386)		C	GAACTTATGGATTTGT	TTATGAG	AATCTTCAC	-----AA	TTGGAACTGT	AA--C	TTTGAAGCAAG	--GTGAAA	TC	AAGGATGCTAC	TCCTTCA			
												Section 345				
	(33369)	33369	33380	33390	33400	33410	33420	33430	33440	33450	33465					
lambda NC_001416.1 (32139)		ACAGAGC	GGCAATAAGTCGTCATCC	CATGTTTTATC	CAGGGCGAT	CAGCAGAGT	GTTAATCTC	CTTGCA	TGGTTT	CATCG--TT	AACCGGAGT	GAT	GT			
SARS-CoV-2 NC_045512.2 (25471)		GAT-TTT	GTTTCGCGC--TACTGCAA	CGATACCGAT	ACAGCGCTCA	--TCCCTT	TCGGATGGC	-TTAT	TGTTGGCGTT	GCAC	TCTTGCT	GT	TTTTC			
												Section 346				
	(33466)	33466	33480	33490	33500	33510	33520	33530	33540	33550	33562					
lambda NC_001416.1 (32234)		CGCGTTCCGG	CTGACGTTCTGCAG	TGTATGCAGTAT	TTTCG----	ACAATG	CGCTCGGC	TTCA	TCCTTG	TCATAGATAC	CAGCAAA	TCCGAAGGC	C			
SARS-CoV-2 NC_045512.2 (25562)		AGAGCGCTTC	CAAAATCATAACCC	TCAAAAGAGAT	GGCAACTAGC	ACTCTCA	AAGGTGT	TTCA	CTTGT	TGCAAC	TTGCT	GTTGT	TGTTTGTAAC	C		
												Section 347				
	(33563)	33563	33570	33580	33590	33600	33610	33620	33630	33640	33659					
lambda NC_001416.1 (32326)		AGACGGG	CACACTGAAT	CATGGCTTT	TATGACGTAACA	-----TCC	GTTTGGGATG	CGACTGC	CACGGC	CCCGTGAT	TTTCTCTGCC	TTTCG	CAG	TT	--	
SARS-CoV-2 NC_045512.2 (25659)		AGTT-TA	CTCA-----	CACCTT	TTGCTCGTT	-----GCTGCTG	GCCTTGAAGC	CCTTTT	CTCTATC	----TT	TATGCTTTAG	TCTA	CTTC	TT	GCA	
												Section 348				
	(33660)	33660	33670	33680	33690	33700	33710	33720	33730	33740	33756					
lambda NC_001416.1 (32417)		-TGAAT	GGTTCGC	GGCGCAT	TCATCCATC-	CATTCGGT	AACGCAG	ATCGGA--TGATT	ACGGT	CCTTGCGGTAA	AATCCGGC	ATGTAC	AGG	ATT	CAT	
SARS-CoV-2 NC_045512.2 (25740)		GAGTAT	AAACTTTGTAA	GATATA	AATAATGAGG	CTTTGGCT	-TTGCTG	GAAATGCCGTTCC	AAAAA	CCCAT---	TACTTTATG	ATGCCA	ACT	ATT	TTC	
												Section 349				
	(33757)	33757	33770	33780	33790	33800	33810	33820	33830	33840	33853					
lambda NC_001416.1 (32510)		TGTCCT	---GCT	CAAGTCCATGCC	ATCAAACT	TGCTGGTT	TTCAT	TGATG	CGGGAC	CAGCCA	TCAACG	-CC	CACCACCG	GAACG	ATGCCAT	TC
SARS-CoV-2 NC_045512.2 (25832)		TTTGCT	GGCATACT	AAATGTTACG	-ACTATTG	TATACCTT	ACAATAG	-TGTAAC	TTCTTCA	ATTGTC	-ATTACTT	CAGGTGAT	GGCAC	AACAAG	TTCC	
												Section 350				
	(33854)	33854	33860	33870	33880	33890	33900	33910	33920	33930	33940	33950				
lambda NC_001416.1 (32602)		TGCTTAT	TCAGGA	AAAGGCGTAA	AATTTCTT	TCGTCC	ACGGATTAA	GGCCGTAC	TGGT	TGGCAACG	ATCAGTAATGC	GATGA	ACTGC	GC	-ATCG	CTGGCA
SARS-CoV-2 NC_045512.2 (25926)		TATTTCT	TGAACATG	ACTACCA	AGATTGGT	TGGT	TATAC	TGAAAATG	GGAATC	----TGG	AGTAAAAG	ACTGTGTT	GATTAC	ACAG	GTTA	CTTCACTTC

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												Section 351
	(33951)	33951	33960	33970	33980	33990	34000	34010	34020	34030	34047	
lambda NC_001416.1 (32698)		TCACCTTTAAATGCGTCTGGCGAAGAG----	TGTGATCAGTTCCTGTGGGTTCGACAGAAATCCA-----	TGCCGACACGTTTCAG--	CCAGCTT							
SARS-CoV-2 NC_045512.2 (26019)		AGACTATT-ACCAGCTGTACTCAACTCAATTGAGTACAGACACTGGTG--TTGAACATGTTACCTTCTTCATCTACAATAAAT	TGTTGATGAGCCTG									
												Section 352
	(34048)	34048	34060	34070	34080	34090	34100	34110	34120	34130	34144	
lambda NC_001416.1 (32781)		CCCAGCCAGCGTTGCGAGTGCAGTACTCATTCGTT-----	TTATACCTCTGAATCAATATCAACCTGGTGGTGAGCAATGGTTTCAACCA-TGTACC									
SARS-CoV-2 NC_045512.2 (26114)		AAGAACAATGTCCAAATTCACACAATCGACGGTTCATCCGGAGTTGTTAATCCAGTAGGAACCAATT	TATGATGAACCGACGACGACTACTAGCGT									
												Section 353
	(34145)	34145	34150	34160	34170	34180	34190	34200	34210	34220	34241	
lambda NC_001416.1 (32872)		GGATGTGTTCTTGCCATGCGCTCTGA	AAC----	TCAACATCGTCA---	TCAAACGCACGGGTAAATGGATT	TTTTTGCTGGCCCCGTGCGGTG--	CAA					
SARS-CoV-2 NC_045512.2 (26211)		GC-----CTTGTAGACACAAGCTGATGAGTACGAACTATGTA	ACTCATTCGTTTCGGAAGAGACAGGTACGT	TAAATAGTTAA	TAGCGTACTTCTT							
												Section 354
	(34242)	34242	34250	34260	34270	34280	34290	34300	34310	34320	34338	
lambda NC_001416.1 (32960)		ATGATCGATG-CATAGCGATTCAAACAGGTGCTGGGG-----	CAGGCCTTTTTC	CATGT-----	CGTCTGCC-----	AGTTCTGCCTCTTCTCTCTC						
SARS-CoV-2 NC_045512.2 (26302)		TTTCTTGCTTTCTGTATCTTGCTAGTTACACTAGCCATCCTTACTGCGCTTCGAT	TGTGTGCGTACTGCTGCAATATTTGTTAA	CGTGAGTCTT								
												Section 355
	(34339)	34339	34350	34360	34370	34380	34390	34400	34410	34420	34435	
lambda NC_001416.1 (33041)		ACGGGCGAGCTGCTGGTA	GTGACGCGCCAGCTCTGAGCCTCAAGACGATCCTGAATGTAA	TA-----	AGCGTTCATGGCTGA	ACTCTGAAATA						
SARS-CoV-2 NC_045512.2 (26398)		GTAAACCTTCTTTTACGT	TTACTCTCGTGT	TAAAAATCTG--	AATTCCTCTAGAGTTCC	TGATCTTCTGGTCTAAC--	GAAC	TAAATATA				
												Section 356
	(34436)	34436	34450	34460	34470	34480	34490	34500	34510	34520	34532	
lambda NC_001416.1 (33131)		G-CTGTGAAAA	TATCGCCCGGAAATGCCGGGCTGATTAGG	AAAA	CAGGA----	AAAGGGGT	TAGTGAA	TGCTTTTGCT	TGATCTCAGTTT	CAGTA		
SARS-CoV-2 NC_045512.2 (26490)		TT-AGTTTTTC	TGTTTGGAAC	-TTTAATTTTAG-----	CCATGGCAGATTCCAACG	TACTATTACCGT	TGAAGAG--	CTTAAAAA	GCTCCTT--			
												Section 357
	(34533)	34533	34540	34550	34560	34570	34580	34590	34600	34610	34629	
lambda NC_001416.1 (33222)		TTAAT	ATCCATTTTTTATA	AGCGTCGACGGCTTC	ACGAAACATCTTT	CATCGCCAATAAAAG	TGGCGATAGTGAATTTAGTCT	GGATAGCCATAAG				
SARS-CoV-2 NC_045512.2 (26574)		---GA	ACAATGG--AACCTAGT--	AATAGGTTC	CTATTC----	CTTACATGGATTGTCTTCTACAATT	TGCCTATGCCAACAG--	GAATAGGTTT				

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Section 358																														
	(34630)	34630	34640	34650	34660	34670	34680	34690	34700	34710	34726																			
lambda NC_001416.1 (33319)		TGT	TTG	ATCCAT	TTCT	TTGGG	ACTCC	TGGCTGATTA-AGTAT	GT	CGA	TAA	G-GCGTT	TCCA	TCC-----	GTC	ACGTAA	TTTAC	GG	GTG--	ATT	CGT									
SARS-CoV-2 NC_045512.2 (26658)		TTG	TAT	ATAAT	TAA	G	T	ATTTT	TCCTCTGGCTGTTATG	GC	CAG	TAA	CTTTAGC	TTGT	TTTGTGCTT	GCTG	CT--G	TTTAC	AGAATAAA	ATT	GGAT									
Section 359																														
	(34727)	34727	34740	34750	34760	34770	34780	34790	34800	34810	34823																			
lambda NC_001416.1 (33406)		CAAGTAA	AGATT	CGGA	AGGGCAGCCA	GCAA	CAG	GCCAC	GCTG	CAATGGCA	TAT	TG--	CAT	TGGTG	TG	CTC	CTTATTTATACAT	TAA	C	GAAAAACGCC	TC									
SARS-CoV-2 NC_045512.2 (26750)		-----	C	AC	CGGT	GGA	ATTGCTATC	GCAA	TG	GCTTGT	CT	TG	AGGCT--	TGA	TG	TGGC	TACG	TA	CTT	CA-----	TTG	CT-----	TCTT	TC						
Section 360																														
	(34824)	34824	34830	34840	34850	34860	34870	34880	34890	34900	34920																			
lambda NC_001416.1 (33501)		GAGTGAAGCGT	TAT	TG	GTATGCG	GTAAAAC	GCACT	CAGGCGGC	CTTGAT	AGTCAT	ATCATCTGA	AT	CAAATATTCCTG	AT	GT	AT	CGAT	TAT	CG	TAT	CG	GTA								
SARS-CoV-2 NC_045512.2 (26823)		AGACTG-----	TT	TGC	GCG-TAC	GCG--	TT	CATG	TGGTCAT--	T	CAATCCA	---	GAA	AA--	CTAAC	ATT	TCTTCTC----	AC	GT	GCC	AC	TCCAT	GGC							
Section 361																														
	(34921)	34921	34930	34940	34950	34960	34970	34980	34990	35000	35017																			
lambda NC_001416.1 (33597)		ATT	CTT	TAT	TTC	CTTC	GCTAC	CA	TC	CA	TTGGAG	GCCA	TC	CT	TCCT	GACCA	TT---	TCC	ATC	-----	ATT	TCCA	GT	CGAA	CT	CACACA	CA	ACACCAT	AT	G
SARS-CoV-2 NC_045512.2 (26901)		ACT	ATT	CT	TGA	CCA-	GACCG	CT	TC	TA	GAAAGT	GAA	TC	GT	TAATC	GGAGC	TGTGA	TCC	TC	GTGGAC	AT	CTTC	GT	ATTG	CT	GGACAC	CA	-TCTAGG	AC	G
Section 362																														
	(35018)	35018	35030	35040	35050	35060	35070	35080	35090	35100	35114																			
lambda NC_001416.1 (33685)		CAT	TTA	AGTCGCTT	GAA--	AT	TGCTA	TAA	GCAGAGCA	TG	TT	GCG	CAGC	ATGAT	TAATAC	AGC	ATTTA	AAT	ACAGAG	CCGT	GTTTAT	TGAGT	CGG	T-						
SARS-CoV-2 NC_045512.2 (26996)		CTG	T-G	ACATCAAG	GACCTGCC	TAA-	AGAA	ATCACTGT	TG	CT	ACAT	CA	CGA	ACGC	TTTCTT	ATT	ACAA	ATT	TGGGAG-	CTTC	GCAGCG	TGTAG	CAG	GT						
Section 363																														
	(35115)	35115	35120	35130	35140	35150	35160	35170	35180	35190	35211																			
lambda NC_001416.1 (33778)		ATTCAGA	GT	C	TGA	CAGAA	AT	TATTAAT	CT	GGT	GAA	GT	TTTTT	CT	CTGT	CAT	TACGT	CATG--	GT	CGATT	CA	ATTTT	TA	TTGATGC	TTT	CA	AGTCG			
SARS-CoV-2 NC_045512.2 (27090)		GACTCAG	GT	T	TG	CTGC--	AT	TACAGTCG	CT	TACAG	GAT	TGGCAA	CT--	AT	TAA	AT	TAAAC	--	ACAG	GA	CCATT	C-	AG---	TAGC--	AG	TGA	CAA	T---		
Section 364																														
	(35212)	35212	35220	35230	35240	35250	35260	35270	35280	35290	35308																			
lambda NC_001416.1 (33873)		TA	AT	CAAT	TATG	TAT	TTTTT	GAT	GT	TTGAC	A	TCTGTT	CATATCC	TCA	CAGATAAAAAA	T	CGC	C-----	C--	T	CACACT	--	GGAG	GGC	AA--	AG	AA	GAA		
SARS-CoV-2 NC_045512.2 (27171)		--	AT	TGC	TTTGC	TTG	TACAGT	AA	GT	GAC-AA	-----	CAGATGTT	TCA	TCTC-----	GT	TGA-	CTTTCA	-GGT	T	ACTA	TAGCAG	GAT	A	TTACT	AA	TT				

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												Section 372																							
	(35988)	35988	36000	36010	36020	36030	36040	36050	36060	36070	36084																								
lambda NC_001416.1 (34605)		TGGCCTGA	ATATGT	TTAATGA	GAGAAATCG	GT	----TTCC	TCA	TGTGT	G-GCAT	GTTTTCGTC	TTTGCTCT	TT---	GCATTT	TCG	CTAGCA	AATTAATGT																		
SARS-CoV-2 NC_045512.2 (27863)		T	CATAATGA	A-AAC	TTGT	CACG	CT	AAACGA	CATGAAAT	TCT	TGT	TTTCTTAG	GAA	TCATC	ACAACT	G	TAGCTGCATTT	CAC	CAAGAA	TG-----															
												Section 373																							
	(36085)	36085	36090	36100	36110	36120	36130	36140	36150	36160	36170	36181																							
lambda NC_001416.1 (34694)		GC	ATCGATT	ATCAGCTATTG	CCAGCG	CAGAT	ATAAG	CGATT	TAAG	CTA-AGAAAACGC	ATTAAGA	TG---	C	AAAACG	ATA	AAGTGCG	ATCAGTAA																		
SARS-CoV-2 NC_045512.2 (27953)		-T	AGTTTAC	AGTCATGTACT	CAACAT	CA-ACC	ATA	TGTAG	TTGAT	G	ACCCGTGTCCTATTCACTTC	T	ATTCTA	AA	TGGT	ATA	TTAGAGT	AGG	AGCTA																
												Section 374																							
	(36182)	36182	36190	36200	36210	36220	36230	36240	36250	36260	36278																								
lambda NC_001416.1 (34786)		TTCA	AAACCTTA	CAG-AAG	AGCAATC	TATG	TTT	TGTGCGC	-AGCCCT	--T	AATGA	AGG	CAGGA	AGTA	TGTGGTTACATCAAA	ACAAT	TCC	CATACA	A																
SARS-CoV-2 NC_045512.2 (28048)		G---	AAA	ATCAG	CA	CC	TTTAATTGAA	TGTGCGT	GGATGAGGCTGGT	TCTA	AAT	CA	CC-	CA	TT	AGTA	C	-ATCGATATCGGT	-AATTATAC	-----A															
												Section 375																							
	(36279)	36279	36290	36300	36310	36320	36330	36340	36350	36360	36375																								
lambda NC_001416.1 (34879)		T	TAGTGAGTTGAT	TGAGCTTGGT	TGTGTTGA	ACAA	AACT	TTT	TTCCCGAT	GGAA	TGGAAAGC	AT	ATAT	TAT	TCCCTAT	TGAGGATA	TT	TACTGGACTGA																	
SARS-CoV-2 NC_045512.2 (28134)		G	TTT-----C-C	TG	TTTACCT	T	-----T	ACAA	----	TT	AATTGCCA	GGAA	C---	CTAA	AT	TGGG	TAG	T---	CT	TGTAG	TGCG	TTG	TTT	C---	G--										
												Section 376																							
	(36376)	36376	36390	36400	36410	36420	36430	36440	36450	36460	36472																								
lambda NC_001416.1 (34976)		ATTAGT	TGCC	AGCT	ATGAT	CCATA	-TAAT	AT	TGAG	-----A	-----T	A	AGC	CA	AGGCC	AAT	AT	CTAAG	TAACTAG	GATAAGAGG	AAT	CGA	TTTTTC												
SARS-CoV-2 NC_045512.2 (28203)		---	TTC	TATGA	AAG-	ACTTT	TTT	AGAG	TATCAT	GAC	GTT	CGTGT	TGTTTTAG	ATTT	CA	TCTAA	ACG	A	CAAA	TAA	AAT	GTCTG	--AT	AAT	G	AG	CCCCA								
												Section 377																							
	(36473)	36473	36480	36490	36500	36510	36520	36530	36540	36550	36569																								
lambda NC_001416.1 (35060)		CCT	TAA	TTTTCTG	GGGT	CC	ACTGCATGT	TATG	CCG	CG----	TTCGCCAGG	CT	TG	CT	GT	ACCAT	GT	GCG	CT	GAT	TCTTGC	GCTC	AA	TA	CGT	T---	GCA								
SARS-CoV-2 NC_045512.2 (28294)		AAA	TC	AGCGAAAT	GCAC	CC	CGCATTACG	TT	TG	GT	G	GACCCTCAGATTCAAC	-TG--	GCA	----	GT	AAC	CA	GA	-----AT	G	GAG	AA	CG	CAG	T	GGG	GC							
												Section 378																							
	(36570)	36570	36580	36590	36600	36610	36620	36630	36640	36650	36666																								
lambda NC_001416.1 (35150)		GGTT	G	CTTTC	AA	TCTGT	TT	TG	TGGTATT	CAGCC	AG	C	ACTGT	A	AGG	-T	TATC	--	G	ATTTA	GTG	CG	CTT	TC	AC	T	CG	T---	G	ATTT	CGG	TT---	T	G	CG
SARS-CoV-2 NC_045512.2 (28379)		---	C	GATCAA	AA	CAACG	TC	G	CCCCAAGGTTT	AC	C	CAATA	A	TACTG	C	GTCTTG	G	TT	CACC	G	CT	CT	CAC	TC	AC	AT	G	GCAAG	G	AAGACC	TT	AAAT	TT	C	C

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												Section 379						
	(36667)	36667	36680	36690	36700	36710	36720	36730	36740	36750	36763							
lambda NC_001416.1 (35238)		ATTTCAG	-CGAGAGAATAGGG	CGGTTAACTGGTTT	TGCGCTTACCCCA	ACCAA	CAGGG	--GATT	TTGCTGCTTTCCATT	GAGCCTGTTTCTCT	TGCGCGA							
SARS-CoV-2 NC_045512.2 (28473)		CTCGAG	GA--CAAGGCGTTC	CAAATTAACACCAA	TAGCAGTCCAGATG	ACCAA	ATTGG	CTACTAC	TACCGA-----AG-AG	CTAC	CAGACGAATT	CG-TG						
												Section 380						
	(36764)	36764	36770	36780	36790	36800	36810	36820	36830	36840	36850	36860						
lambda NC_001416.1 (35332)		CGTTTC	GCGGCGGCGTGT	TGTGTCATC	CATCTGGATTCT	CCTGT	CAGTTAGCTTT	TGGTGGTG	TGTGGCAGTTT	GTAGTCCTGAAC	GAA-----AA	CCCC						
SARS-CoV-2 NC_045512.2 (28560)		GTGGT	GA--CGGTAAAA	TGAAAGATC	TCAGTCCAGA	TGGTAT	TTCTACTACC	TAGGAAC	TGGGC	CAGAA	GCTG--GACTT	CCC-TATGGTGCTAA						
												Section 381						
	(36861)	36861	36870	36880	36890	36900	36910	36920	36930	36940	36957							
lambda NC_001416.1 (35424)		CCGC	GAT--TGGCACAT	TGGCAGCTAA	TCCGGAATCG	CAC	TACGGCAATGCTTCGTTTCG	TATCAC	CACCCCA	AAGCCTTCT	GCTTTG	AATGC-						
SARS-CoV-2 NC_045512.2 (28651)		CAAA	GACGGCAT	CATATGGTT	GC-AACTGA	GGAGCCTTGA-ATA	CACAAAAGATC	CAT	TGGCAC	C	G----CAATCCTGCT	AAC---AATGCT						
												Section 382						
	(36958)	36958	36970	36980	36990	37000	37010	37020	37030	37040	37054							
lambda NC_001416.1 (35518)		-TGCC	CTTCTTC--AGGG	CTTAA-TTTTT	AAGAGC	GTCA	CCTTCATGGTGG	TCAGTGC	GTCTGCT	GATGTGCTCAGTATC	ACCGCCAGTGGTATTT							
SARS-CoV-2 NC_045512.2 (28739)		GCAAT	CGTGC	TACA	ACTTCTCA	AGGAACAA	CATTGCA	-----AAAG	GCTCTC	TACGC	AG--AAGG-----GAGCAG	AGGCGGC-----						
												Section 383						
	(37055)	37055	37060	37070	37080	37090	37100	37110	37120	37130	37140	37151						
lambda NC_001416.1 (35611)		ATGTC	AACACCGC--	CAGAGATAATT	TATCACCGC	CAGATGGTT	ATCTGT	ATGTTTTTTATATGAAT	TTATTTT	TTTG	CAGGGG	GGCATTGTTTG	GTAG					
SARS-CoV-2 NC_045512.2 (28811)		AGTCA	A---G	CCTCTTCTC	GT	TCC--TCATCA	CGT	AG-TCGC-AA	CAGTTCAAGAA-----	ATTCAACT	T--C--CA	GGCAG--CA	GTAG					
												Section 384						
	(37152)	37152	37160	37170	37180	37190	37200	37210	37220	37230	37248							
lambda NC_001416.1 (35706)		GT	GAGATCTGA-ATT	GCTATGTT	TAGTGA	TTG	TATCTATTT	---T	CAATAAA	TACAAT--	TGGTTATGTGTTTT	TGGGGGCG	ATCGTGA					
SARS-CoV-2 NC_045512.2 (28882)		GGGA	ACTTCTCCTGC	TAG	AATGCT	TGGCAAT	GGCG	GTGA	TGCTGCT	-CTTGC	TTTGCTGCT	TGCTT-GACA	GATTGAACCAGCTTT	GAGCAAAA	TGT			
												Section 385						
	(37249)	37249	37260	37270	37280	37290	37300	37310	37320	37330	37345							
lambda NC_001416.1 (35796)		--	GGCAAAG	AAAACCCGGCGCTG	AGGC	CGG	GTTATT	CTTGT	TCT	CTGGTC	AAATT	ATATAG	TTG--GAAAA	CAAGGAT	-GCATATATG	AA	TGAACGA	
SARS-CoV-2 NC_045512.2 (28977)		CT	GGT	AAAG	GCC-----	AACA	CAAC	CAAG	G---C	AAACT	TG	CA--CT	AA	GAAATCT	TGCTGCTGAGGCTTCTAAGAA	GCCT	CGGCAAA	AACGTAC

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		Section 386									
(37346)	37346	37360	37370	37380	37390	37400	37410	37420	37430	37442	
lambda NC_001416.1 (35888)	TGCAGAGGC	AATGC	CGATGGC	GATAGTGGG	TATCAT	GTAGCCGC	TATGCT	GGAAAGAAG	CAA-T	AACCCGCAG	GAA
SARS-CoV-2 NC_045512.2 (29062)	TGC-C	A-CTAA	GCATACAAT	GTAACACAAGC	TTTC	GCAGACG	TGGT	CCAGAACAAACC	CAAGG	AAATTTTG	GGG
		Section 387									
(37443)	37443	37450	37460	37470	37480	37490	37500	37510	37520	37539	
lambda NC_001416.1 (35984)	AAAACTA	AGGGCAT	AGACAATAACT	ACCGATGT	CA--	TATACCC	ATACTCT	TAATCTTGG	C	CAGTCGGC	G
SARS-CoV-2 NC_045512.2 (29157)	GAA-CT	GATTACA	AACATTGGCCGC	AAATTGCA	CAAT	TGCC	CCC	CAGGG	GG-TT	CA-GCGTT	C
		Section 388									
(37540)	37540	37550	37560	37570	37580	37590	37600	37610	37620	37636	
lambda NC_001416.1 (36077)	CAA	GGCAG	CAATCAG	-GATTGC	AATCAT	G	GTTCCTG	CATATG	ATGAC	AATGT	CGCCCCAAG
SARS-CoV-2 NC_045512.2 (29251)	TTT	GG--	GACGTG	GTTGACCT	ACA	CA-G	---GTGC	CATCAA	AT	TGGATGAC	AAAGATCCA
		Section 389									
(37637)	37637	37650	37660	37670	37680	37690	37700	37710	37720	37733	
lambda NC_001416.1 (36173)	G	TAGTG	G---CGG	AAA--AGGAG	A	TAGCA	AATGCT	TACGATA	TAACG	-TAA	GGAA
SARS-CoV-2 NC_045512.2 (29342)	ATT	GAC	G	CATACA	AAACATT	CCC	ACCAAC	AGA	GCT---	AAAAAG	GAC
		Section 390									
(37734)	37734	37740	37750	37760	37770	37780	37790	37800	37810	37820	37830
lambda NC_001416.1 (36260)	AA	TTA	CTCCTGA	TAA	TTAATC	CTTA	AACTT	TGC	CCACC	TGCCT	TTA
SARS-CoV-2 NC_045512.2 (29436)	AA	CAG	CAAACTG	TGA-CTC	TTCTT	CCTGC	TGCA-GAT	TGGATG	--ATTTCT	CCAAAC	AAT
		Section 391									
(37831)	37831	37840	37850	37860	37870	37880	37890	37900	37910	37927	
lambda NC_001416.1 (36357)	T	CAGC	TATCT	CAG-CAT	TGGTGA	CCTTGTT	CAGAG	GC	GCTGA	GAGAT	GGCCT
SARS-CoV-2 NC_045512.2 (29522)	AC---	TCAGG	CCTAA	ACTCAT	-GCAG	ACCA	CAAG	-GCAG	ATG	GGCTATAT	TAA
		Section 392									
(37928)	37928	37940	37950	37960	37970	37980	37990	38000	38010	38024	
lambda NC_001416.1 (36453)	TT	TGCC	CGCAG	GCTAAT	TGTCTGA	AAATTT	GAGGTG	ACGGG	TTA	AAATA	ATAT
SARS-CoV-2 NC_045512.2 (29600)	AG	TCTAC	TCTT	GTGC	AGAATGA	ATTC	TCGTA	ACTAC	ATAGCA	CAAGTA	GATGTAG



## SARS-CoV-2 &amp; lambda.apr

											Section 393
	(38025)	38025	38030	38040	38050	38060	38070	38080	38090	38100	38110 38121
lambda NC_001416.1 (36544)		TAATGACT	-ATATCC	AATGAGTCA	AAAGCTC	-CCCTT	CAATATCT	GTTGCCCT	TAAGACCTT	TAATATATCGCCA	AATACAGGTAGCTTGGCTTCT
SARS-CoV-2 NC_045512.2 (29692)		GTAAACATT	TAGGGAGG	ACTTG-AAAG	AGCCACCA	-CAATT	TT--CAG	CGAGGCCAC	--GCGGAG	TACGATCG----	AGTG---TACAGTGAACAAT
											Section 394
	(38122)	38122	38130	38140	38150	38160	38170	38180	38190	38200	38218
lambda NC_001416.1 (36639)		ACCTTCACCGTT	GTTGGGCCGATG	AAATG-CAT	ATGCA	TAAACAT	CGTCTTT	GTTGGTGGT	TCCCCTC	ATCAGTGGC	TCTATCTGAACGCGCTCTCCACTG
SARS-CoV-2 NC_045512.2 (29773)		GCTAGGGAGAGCT	GCTATATGGAA	AGGCCCTA	ATGTG	TAAAT	TAATTTT	--AG--	TAGTGCT	ATCCCCA--	TGTGATTTTAATAGCTTCTTAGGA
											Section 395
	(38219)	38219	38230	38240	38250	38260	38270	38280	38290	38300	38315
lambda NC_001416.1 (36735)		CTT-AATGAC	ATTTCCT---	TTCCCGATT	AAAAAA	T---C	TGTCAGATCGGAT	GTTGGTTCGGCCCG	AAAACAGTTCT	TGGCAAACCAAT	GTTGTCGCC
SARS-CoV-2 NC_045512.2 (29864)		GAATGACA	AAAAAAAAAAAAAAAA	AAAAAA	AAAAAA	AAAAAA	-----	-----	-----	-----	-----
											Section 396
	(38316)	38316	38330	38340	38350	38360	38370	38380	38390	38400	38412
lambda NC_001416.1 (36824)		TTCAACAAACAAAAA	GATGGGAATCCCAAT	GATTCGTCATCT	GCGAGGCTGTT	CTTAATATCTT	CAACTGAAGCTTT	TAGAGCGATTT	TATCTTCTGA	-----	-----
SARS-CoV-2 NC_045512.2 (29904)		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
											Section 397
	(38413)	38413	38420	38430	38440	38450	38460	38470	38480	38490	38509
lambda NC_001416.1 (36921)		ACCAGACTCTT	GTCATTTGTTTT	GGTAAAGAGAAA	AGTTTTT	TCCATCGATTTT	TATGAATATACAA	ATAATTGGAGCCA	AACCTGCAGGT	GATGATTAT	-----
SARS-CoV-2 NC_045512.2 (29904)		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
											Section 398
	(38510)	38510	38520	38530	38540	38550	38560	38570	38580	38590	38606
lambda NC_001416.1 (37018)		CAGCCAGCAGAGA	AATTAAGGAAAA	CAGACAGGTTT	TATTGAGCGCTT	ATCTTTCCCTTT	ATTTTTGCTGCGG	TAAAGTCGCATA	AAAAACCATT	CTTTCAT	-----
SARS-CoV-2 NC_045512.2 (29904)		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
											Section 399
	(38607)	38607	38620	38630	38640	38650	38660	38670	38680	38690	38703
lambda NC_001416.1 (37115)		AATTCAATCCATT	TACTATGTTAT	GTTCTGAGGGG	GAGTGAAAA	TCCCCTAATT	TCGATGAAGATT	CTTGCTCAATT	GTTATCAGCT	ATGCGCCGACC	-----
SARS-CoV-2 NC_045512.2 (29904)		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

## SARS-CoV-2 &amp; lambda.apr

Section 400											
(38704)	38704	38710	38720	38730	38740	38750	38760	38770	38780	38790	38800
lambda NC_001416.1 (37212)	AGAACACCTTGCCGATCAGCCAAACGTCTCTTCAGGGCCACTGACTAGCGATAACTTTCCCCACAACGGAACAACCTCTCATTGCATGGGATCATTGGG										
SARS-CoV-2 NC_045512.2 (29904)	-----										
Section 401											
(38801)	38801	38810	38820	38830	38840	38850	38860	38870	38880	38897	
lambda NC_001416.1 (37309)	TACTGTGGGTTTAGTGGTTGTAAAAACACCTGACCGCTATCCCTGATCAGTTTCTTGAAGGTAAACTCATCACCCCCAAGTCTGGCTATGCAGAAAT										
SARS-CoV-2 NC_045512.2 (29904)	-----										
Section 402											
(38898)	38898	38910	38920	38930	38940	38950	38960	38970	38980	38994	
lambda NC_001416.1 (37406)	CACCTGGCTCAACAGCCTGCTCAGGGTCAACGAGAATTAACATTCCGTCAGGAAAGCTTGGCTTGGAGCCTGTTGGTGCGGTCATGGAATTACCTTC										
SARS-CoV-2 NC_045512.2 (29904)	-----										
Section 403											
(38995)	38995	39000	39010	39020	39030	39040	39050	39060	39070	39080	39091
lambda NC_001416.1 (37503)	AACCTCAAGCCAGAATGCAGAATCACTGGCTTTTTTGGTTGTGCTTACCCATCTCTCCGCATCACCTTTGGTAAAGGTTCTAAGCTCAGGTGAGAAC										
SARS-CoV-2 NC_045512.2 (29904)	-----										
Section 404											
(39092)	39092	39100	39110	39120	39130	39140	39150	39160	39170	39188	
lambda NC_001416.1 (37600)	ATCCCTGCCTGAACATGAGAAAAACAGGGTACTCATACTCACTTCTAAGTGACGGCTGCATACTAACCGCTTCATACATCTCGTAGATTTCTCTGG										
SARS-CoV-2 NC_045512.2 (29904)	-----										
Section 405											
(39189)	39189	39200	39210	39220	39230	39240	39250	39260	39270	39285	
lambda NC_001416.1 (37697)	CGATTGAAGGGCTAAATTCTTCAACGCTAACTTTGAGAATTTTGTGCAAGCAATGCGGCGTTATAAGCATTTAATGCATTGATGCCATTAAATAAAGC										
SARS-CoV-2 NC_045512.2 (29904)	-----										
Section 406											
(39286)	39286	39300	39310	39320	39330	39340	39350	39360	39370	39382	
lambda NC_001416.1 (37794)	ACCAACGCCTGACTGCCCCATCCCCATCTTGTCTGCGACAGATTCTTGGGATAAGCCAAGTTCATTTTTCTTTTTTTCATAAATTGCTTTAAGGCGA										
SARS-CoV-2 NC_045512.2 (29904)	-----										

## SARS-CoV-2 &amp; lambda.apr

											Section 407
	(39383)	39383	39390	39400	39410	39420	39430	39440	39450	39460	39479
lambda NC_001416.1 (37891)		CGTGCGTCCTCAAGCTGCTCTTGTGTTAATGGTTTCTTTTTTGTGCTCATACGTTAAATCTATCACCGCAAGGGATAAAATATCTAACACCGTGCGTG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 408
	(39480)	39480	39490	39500	39510	39520	39530	39540	39550	39560	39576
lambda NC_001416.1 (37988)		TTGACTATTTTACCTCTGGCGGTGATAATGGTTGCATGTACTAAGGAGGTTGTATGGAACAACGCATAACCCCTGAAAGATTATGCAATGCGCTTTGG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 409
	(39577)	39577	39590	39600	39610	39620	39630	39640	39650	39660	39673
lambda NC_001416.1 (38085)		GCAAACCAAGACAGCTAAAGATCTCGGCGTATATCAAAGCGCGATCAACAAGGCCATTCATGCAGGCCGAAAGATTTTTTTAACTATAAACGCTGAT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 410
	(39674)	39674	39680	39690	39700	39710	39720	39730	39740	39750	39760 39770
lambda NC_001416.1 (38182)		GGAAGCGTTTATGCGGAAGAGGTAAAGCCCTTCCCGAGTAACAAAAAACAACAGCATAAATAACCCCGCTCTTACACATTCCAGCCCTGAAAAAGG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 411
	(39771)	39771	39780	39790	39800	39810	39820	39830	39840	39850	39867
lambda NC_001416.1 (38279)		GCATCAAATTAAACCACACCTATGGTGTATGCATTTATTTGCATACATTCAATCAATTGTTATCTAAGGAAATACTTACATATGGTTCGTGCAAACA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 412
	(39868)	39868	39880	39890	39900	39910	39920	39930	39940	39950	39964
lambda NC_001416.1 (38376)		AACGCAACGAGGCTCTACGAATCGAGAGTGCGTTGCTTAACAAAATCGCAATGCTTGGAAGTGAAGACAGCGGAAGCTGTGGGCGTTGATAAGTC									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 413
	(39965)	39965	39970	39980	39990	40000	40010	40020	40030	40040	40050 40061
lambda NC_001416.1 (38473)		GCAGATCAGCAGGTGGAAGAGGGACTGGATTCCAAAGTTCTCAATGCTGCTTGCTGTTCTTGAATGGGGGTCGTTGACGACGACATGGCTCGATTG									
SARS-CoV-2 NC_045512.2 (29904)		-----									

## SARS-CoV-2 &amp; lambda.apr

											Section 414
	(40062)	40062	40070	40080	40090	40100	40110	40120	40130	40140	40158
lambda NC_001416.1 (38570)		GCGCGACAAGTTGCTGCGATTCTACCAATAAAAAACGCCCGCGGCAACCGAGCGTTCTGAACAAATCCAGATGGAGTTCTGAGGTCATTACTGGA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 415
	(40159)	40159	40170	40180	40190	40200	40210	40220	40230	40240	40255
lamhda NC_001416.1 (38667)		TCTATCAACAGGAGTCATTATGACAAATACAGCAAAAATACTCAACTTCGGCAGAGGTAACTTTGCCGGACAGGAGCGTAATGTGGCAGATCTCGAT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 416
	(40256)	40256	40270	40280	40290	40300	40310	40320	40330	40340	40352
lambda NC_001416.1 (38764)		GATGGTTACGCCAGACTATCAAATATGCTGCTTGAGGCTTATTCGGGCGCAGATCTGACCAAGCGACAGTTTAAAGTGCTGCTTGCCATTCTGCGTA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 417
	(40353)	40353	40360	40370	40380	40390	40400	40410	40420	40430	40449
lamhda NC_001416.1 (38861)		AAACCTATGGGTGGAATAAACCAATGGACAGAATCACCGATTCTCAACTTAGCGAGATTACAAAGTTACCTGTCAAACGGTGCAATGAAGCCAAGTT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 418
	(40450)	40450	40460	40470	40480	40490	40500	40510	40520	40530	40546
lambda NC_001416.1 (38958)		AGAACTCGTCAGAATGAATATTATCAAGCAGCAAGGCGGCATGTTTGGACCAAATAAAAAACATCTCAGAATGGTGCATCCCTCAAAACGAGGGAAAA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 419
	(40547)	40547	40560	40570	40580	40590	40600	40610	40620	40630	40643
lambda NC_001416.1 (39055)		TCCCCTAAACGAGGGATAAAACATCCCTCAAATTGGGGGATTGCTATCCCTCAAAACAGGGGGACACAAAAGACACTATTACAAAAGAAAAAGAA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 420
	(40644)	40644	40650	40660	40670	40680	40690	40700	40710	40720	40730 40740
lamhda NC_001416.1 (39152)		AAGATTATTTCGTCAGAGAATTCTGGCGAATCCTCTGACCAGCCAGAAAACGACCTTTCTGTGGTGAAACCGGATGCTGCAATTCAGAGCGGCAGCAA									
SARS-CoV-2 NC_045512.2 (29904)		-----									

## SARS-CoV-2 &amp; lambda.apr

											Section 421
	(40741)	40741	40750	40760	40770	40780	40790	40800	40810	40820	40837
lambda NC_001416.1 (39249)		GTGGGGGACAGCAGAAGACCTGACCGCCGCAGAGTGGATGTTTGACATGGTGAAGACTATCGCACCATCAGCCAGAAAACCGAATTTTGCTGGGTGG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 422
	(40838)	40838	40850	40860	40870	40880	40890	40900	40910	40920	40934
lambda NC_001416.1 (39346)		GCTAACGATATCCGCCTGATGCGTGAACGTGACGGACGTAACCACCGCGACATGTGTGTGCTGTTCCGCTGGGCATGCCAGGACAACCTTCTGGTCCG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 423
	(40935)	40935	40940	40950	40960	40970	40980	40990	41000	41010	41020 41031
lambda NC_001416.1 (39443)		GTAACGTGCTGAGCCCGGCCAAACTCCGCGATAAGTGGACCCAACTCGAAATCAACCGTAACAAGCAACAGGCAGGCGTGACAGCCAGCAAACCAA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 424
	(41032)	41032	41040	41050	41060	41070	41080	41090	41100	41110	41128
lambda NC_001416.1 (39540)		ACTCGACCTGACAAACACAGACTGGATTTACGGGGTGGATCTATGAAAAACATCGCCGCACAGATGGTTAACTTTGACCGTGAGCAGATGCGTCGGA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 425
	(41129)	41129	41140	41150	41160	41170	41180	41190	41200	41210	41225
lambda NC_001416.1 (39637)		TCGCCAACAACATGCCGGAACAGTACGACGAAAAGCCGCAGGTACAGCAGGTAGCGCAGATCATCAACGGTGTGTTTCAGCCAGTTACTGGCAACTTT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 426
	(41226)	41226	41240	41250	41260	41270	41280	41290	41300	41310	41322
lambda NC_001416.1 (39734)		CCCGGCGAGCCTGGCTAACCGTGACCAGAACGAAGTGAACGAAATCCGTCGCCAGTGGGTTCTGGCTTTTCGGGAAAACGGGATCACCACGATGGAA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 427
	(41323)	41323	41330	41340	41350	41360	41370	41380	41390	41400	41419
lambda NC_001416.1 (39831)		CAGGTTAACGCAGGAATGCGCGTAGCCCGTCGGCAGAATCGACCATTTCTGCCATCACCAGGCGAGTTTGTGTCATGGTGCCGGGAAGAAGCATCCG									
SARS-CoV-2 NC_045512.2 (29904)		-----									

## SARS-CoV-2 &amp; lambda.apr

											Section 428
	(41420)	41420	41430	41440	41450	41460	41470	41480	41490	41500	41516
lambda NC_001416.1 (39928)		TTACCGCCGGACTGCCAAACGTCAGCGAGCTGGTTGATATGGTTTACGAGTATTGCCGGAAGCGAGGCCTGTATCCGGATGCGGAGTCTTATCCGTG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 429
	(41517)	41517	41530	41540	41550	41560	41570	41580	41590	41600	41613
lambda NC_001416.1 (40025)		GAAATCAAACGCGCACTACTGGCTGGTTACCAACCTGTATCAGAACATGCGGGCCAATGCGCTTACTGATGCGGAATTACGCCGTAAGGCCGCGAGAT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 430
	(41614)	41614	41620	41630	41640	41650	41660	41670	41680	41690	41700 41710
lambda NC_001416.1 (40122)		GAGCTTGTCATATGACTGCGAGAATTAACCGTGGTGAGGCGATCCCTGAACCAGTAAAACAACCTTCCTGTCATGGGCGGTAGACCTCTAAATCGTG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 431
	(41711)	41711	41720	41730	41740	41750	41760	41770	41780	41790	41807
lambda NC_001416.1 (40219)		CACAGGCTCTGGCGAAGATCGCAGAAATCAAAGCTAAGTTCGGACTGAAAGGAGCAAGTGTATGACGGGCAAAGAGGCAATTATTTCATTACCTGGGG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 432
	(41808)	41808	41820	41830	41840	41850	41860	41870	41880	41890	41904
lambda NC_001416.1 (40316)		ACGCATAATAGCTTCTGTGCGCCGGACGTTGCCGCGCTAACAGGCGCAACAGTAACCAGCATAAATCAGGCCGCGGCTAAAATGGCACGGGCAGGTC									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 433
	(41905)	41905 41910	41920	41930	41940	41950	41960	41970	41980	41990	42001
lambda NC_001416.1 (40413)		TTCTGGTTATCGAAGGTAAGGTCTGGCGAACGGTGTATTACCGGTTTGCTACCAGGGAAGAACGGGAAGGAAAGATGAGCACGAACCTGGTTTTTTAA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 434
	(42002)	42002	42010	42020	42030	42040	42050	42060	42070	42080	42098
lambda NC_001416.1 (40510)		GGAGTGTCGCCAGAGTGCCGCGATGAAACGGGTATTGGCGGTATATGGAGTTAAAAGATGACCATCTACATTACTGAGCTAATAACAGGCCTGCTGG									
SARS-CoV-2 NC_045512.2 (29904)		-----									

## SARS-CoV-2 &amp; lambda.apr

											Section 435
	(42099)	42099	42110	42120	42130	42140	42150	42160	42170	42180	42195
lambda NC_001416.1 (40607)		TAATCGCAGGCCTTTTTATTTGGGGGAGAGGGAAGTCATGAAAAAATAACCTTTGAAATTTCGATCTCCAGCACATCAGCAAAACGCTATTCACGCA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 436
	(42196)	42196	42210	42220	42230	42240	42250	42260	42270	42280	42292
lambda NC_001416.1 (40704)		GTACAGCAAATCCTTCCAGACCCAACCAACCAATCGTAGTAACCATTCAGGAACGCAACCGCAGCTTAGACCAAAACAGGAAGCTATGGGCCTGCT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 437
	(42293)	42293	42300	42310	42320	42330	42340	42350	42360	42370	42389
lambda NC_001416.1 (40801)		TAGGTGACGTCTCTCGTCAGGTTGAATGGCATGGTCGCTGGCTGGATGCAGAAAGCTGGAAGTGTGTGTTTACCGCAGCATTAAAGCAGCAGGATGT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 438
	(42390)	42390	42400	42410	42420	42430	42440	42450	42460	42470	42486
lambda NC_001416.1 (40898)		TGTTCCCTAACCTTGCCGGGAATGGCTTTGTGGTAATAGGCCAGTCAACCAGCAGGATGCGTGTAGGCGAATTTGCGGAGCTATTAGAGCTTATACAG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 439
	(42487)	42487	42500	42510	42520	42530	42540	42550	42560	42570	42583
lambda NC_001416.1 (40995)		GCATTCCGTACAGAGCGTGGCGTTAAGTGGTCAGACGAAGCGAGACTGGCTCTGGAGTGGAAGCGAGATGGGGAGACAGGGCTGCATGATAAATGT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 440
	(42584)	42584	42590	42600	42610	42620	42630	42640	42650	42660	42670 42680
lambda NC_001416.1 (41092)		CGTTAGTTTCTCCGGTGGCAGGACGTCAGCATATTTGCTCTGGCTAATGGAGCAAAAGCGACGGGCAGGTAAAGACGTGCATTACGTTTTTCATGGAT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 441
	(42681)	42681	42690	42700	42710	42720	42730	42740	42750	42760	42777
lambda NC_001416.1 (41189)		ACAGGTTGTGAACATCCAATGACATATCGGTTTGTTCAGGGGAAGTTGTGAAGTTCTGGGATATACCGCTCACCCTATTGCAGGTTGATATCAACCCGG									
SARS-CoV-2 NC_045512.2 (29904)		-----									

## SARS-CoV-2 &amp; lambda.apr

											Section 442	
	(42778)	42778	42790	42800	42810	42820	42830	42840	42850	42860	42874	
lambda NC_001416.1 (41286)		AGCTTGGACAGCCAAATGGTTATACGGTATGGGAACCAAAGGATATTCAGACGCGAATGCCTGTTCTGAAGCCATTTATCGATATGGTAAAGAAATA										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 443	
	(42875)	42875	42880	42890	42900	42910	42920	42930	42940	42950	42960	42971
lambda NC_001416.1 (41383)		TGGCACTCCATACGTCGGCGGCGCGTTCTGCACTGACAGATTAAAACTCGTTCCTTCACCAAATACTGTGATGACCATTTCGGGCGAGGGAATTAC										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 444	
	(42972)	42972	42980	42990	43000	43010	43020	43030	43040	43050	43068	
lambda NC_001416.1 (41480)		ACCACGTGGATTGGCATCAGAGCTGATGAACCGAAGCGGCTAAAGCCAAAGCCTGGAATCAGATATCTTGCTGAACTGTCAGACTTTGAGAAGGAAG										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 445	
	(43069)	43069	43080	43090	43100	43110	43120	43130	43140	43150	43165	
lambda NC_001416.1 (41577)		ATATCCTCGCATGGTGGAAGCAACAACCATTCGATTTGCAAATACCGGAACATCTCGGTAACATGTCATATTCTGCATTAAAAAATCAACGCAAAAAAT										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 446	
	(43166)	43166	43180	43190	43200	43210	43220	43230	43240	43250	43262	
lambda NC_001416.1 (41674)		CGGACTTGCTGCAAAGATGAGGAGGGATTGCAGCGTGTTTTTAATGAGGTCATCACGGGATCCCATGTGCGTGACGGACATCGGGAAACGCCAAAG										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 447	
	(43263)	43263	43270	43280	43290	43300	43310	43320	43330	43340	43359	
lambda NC_001416.1 (41771)		GAGATTATGTACCGAGGAAGAATGTCGCTGGACGGTATCGCGAAAATGTATTGAGAAAATGATTATCAAGCCCTGTATCAGGACATGGTACGAGCTA										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 448	
	(43360)	43360	43370	43380	43390	43400	43410	43420	43430	43440	43456	
lambda NC_001416.1 (41868)		AAAGATTGATACCGGCTCTTGTTCTGAGTCATGCGAAAATATTTGGAGGGCAGCTTGATTTGCACTTCGGGAGGGAAGCTGCATGATGCGATGTTAT										
SARS-CoV-2 NC_045512.2 (29904)		-----										



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											Section 449
	(43457)	43457	43470	43480	43490	43500	43510	43520	43530	43540	43553
lambda NC_001416.1 (41965)		CGGTGCGGTGAATGCAAAGAAGATAACCGCTTCCGACCAAATCAACCTTACTGGAATCGATGGTGTCTCCGGTGTGAAAGAACACCAACAGGGGTGT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 450
	(43554)	43554	43560	43570	43580	43590	43600	43610	43620	43630	43640 43650
lamhda NC_001416.1 (42062)		TACCACTACCGCAGGAAAAGGAGGACGTGTGGCGAGACAGCGACGAAGTATCACCGACATAATCTGCGAAAAC TGC AAACTGCAAATACCTTCCAACGAAACGC									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 451
	(43651)	43651	43660	43670	43680	43690	43700	43710	43720	43730	43747
lambda NC_001416.1 (42159)		ACCAGAAATAAACCCAAGCCAATCCCAAAAGAATCTGACGTAAAAACCTTCAACTACACGGCTCACCTGTGGGATATCCGGTGGCTAAGACGTCGTG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 452
	(43748)	43748	43760	43770	43780	43790	43800	43810	43820	43830	43844
lamhda NC_001416.1 (42256)		CGAGGAAAACAAGGTGATTGACCAAAATCGAAGTTACGAACAAGAAAGCGTCGAGCGAGCTTTAACGTGCGCTAACTGCGGTGAGAAAGCTGCATGTG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 453
	(43845)	43845	43850	43860	43870	43880	43890	43900	43910	43920	43930 43941
lambda NC_001416.1 (42353)		CTGGAAGTTCACGTGTGTGAGCACTGCTGCGCAGAACTGATGAGCGATCCGAATAGCTCGATGCACGAGGAAGAAGATGATGGCTAAACCAGCGCGA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 454
	(43942)	43942	43950	43960	43970	43980	43990	44000	44010	44020	44038
lambda NC_001416.1 (42450)		AGACGATGTAAAAACGATGAATGCCGGGAATGGTTTCACCTGCATTGCTAATCAGTGGTGGTGTCTCTCCAGAGTGTGGAACCAAGATAGCACTCG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 455
	(44039)	44039	44050	44060	44070	44080	44090	44100	44110	44120	44135
lamhda NC_001416.1 (42547)		AACGACGAAGTAAAGAACGCGAAAAAGCGGAAAAAGCAGCAGAGAAGAAACGACGACGAGAGGAGCAGAAACAGAAAGATAAACTTAAGATTGAAA									
SARS-CoV-2 NC_045512.2 (29904)		-----									

## SARS-CoV-2 &amp; lambda.apr

											Section 456	
	(44136)	44136	44150	44160	44170	44180	44190	44200	44210	44220	44232	
lambda NC_001416.1 (42644)		ACTCGCCTTAAAGCCCCGCAGTTACTGGATTAAACAAGCCCAACAAGCCGTAAACGCCTTCATCAGAGAAAGAGACCGCGACTTACCATGTATCTCG										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 457	
	(44233)	44233	44240	44250	44260	44270	44280	44290	44300	44310	44329	
lambda NC_001416.1 (42741)		TGCGGAACGCTCACGTCTGCTCAGTGGGATGCCGGACATTACCGGACAACCTGCTGCGGCACCTCAACTCCGATTTAATGAACGCAATATTCACAAGC										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 458	
	(44330)	44330	44340	44350	44360	44370	44380	44390	44400	44410	44426	
lambda NC_001416.1 (42838)		AATGCGTGGTGTGCAACCAGCACAAAAGCGGAAATCTCGTTCCGTATCGCGTCGAACTGATTAGCCGCATCGGGCAGGAAGCAGTAGACGAAATCGA										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 459	
	(44427)	44427	44440	44450	44460	44470	44480	44490	44500	44510	44523	
lambda NC_001416.1 (42935)		ATCAAACCATAACCGCCATCGCTGGACTATCGAAGAGTGCAAGGCGATCAAGGCAGAGTACCAACAGAACTCAAAGACCTGCGAAATAGCAGAAGT										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 460	
	(44524)	44524	44530	44540	44550	44560	44570	44580	44590	44600	44610	44620
lambda NC_001416.1 (43032)		GAGGCCGCATGACGTTCTCAGTAAAAACCATTCAGACATGCTCGTTGAAGCATACGGAAATCAGACAGAAGTAGCACGCAGACTGAAATGTAGTCG										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 461	
	(44621)	44621	44630	44640	44650	44660	44670	44680	44690	44700	44717	
lambda NC_001416.1 (43129)		CGGTACGGTCAGAAAATACGTTGATGATAAAGACGGGAAAATGCACGCCATCGTCAACGACGTTCTCATGGTTCATCGCGGATGGAGTGAAAGAGAT										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 462	
	(44718)	44718	44730	44740	44750	44760	44770	44780	44790	44800	44814	
lambda NC_001416.1 (43226)		GCGCTATTACGAAAAAATTGATGGCAGCAAATACCGAAATATTTGGGTAGTTGGCGATCTGCACGGATGCTACACGAACCTGATGAACAAACTGGAT										
SARS-CoV-2 NC_045512.2 (29904)		-----										

## SARS-CoV-2 &amp; lambda.apr

Section 463										
(44815)	44815	44820	44830	44840	44850	44860	44870	44880	44890	44900 44911
lambda NC_001416.1 (43323)	ACGATTGGATTTCGACAACAAAAAGACCTGCTTATCTCGGTGGGCGATTTGGTTGATCGTGGTGCAGAGAACGTTGAATGCCTGGAATTAATCACAT									
SARS-CoV-2 NC_045512.2 (29904)	-----									
Section 464										
(44912)	44912	44920	44930	44940	44950	44960	44970	44980	44990	45008
lambda NC_001416.1 (43420)	TCCCCTGGTTCAGAGCTGTACGTGGAAACCATGAGCAAATGATGATTGATGGCTTATCAGAGCGTGGAAACGTTAATCACTGGCTGCTTAATGGCGG									
SARS-CoV-2 NC_045512.2 (29904)	-----									
Section 465										
(45009)	45009	45020	45030	45040	45050	45060	45070	45080	45090	45105
lambda NC_001416.1 (43517)	TGGCTGGTTCTTTAATCTCGATTACGACAAAGAAATTCTGGCTAAAGCTCTTGCCCATAAAGCAGATGAACTTCCGTTAATCATCGAACTGGTGAGC									
SARS-CoV-2 NC_045512.2 (29904)	-----									
Section 466										
(45106)	45106	45120	45130	45140	45150	45160	45170	45180	45190	45202
lambda NC_001416.1 (43614)	AAAGATAAAAAATATGTTATCTGCCACGCCGATTATCCCTTTGACGAATACGAGTTTGGAAAGCCAGTTGATCATCAGCAGGTAATCTGGAACCGCG									
SARS-CoV-2 NC_045512.2 (29904)	-----									
Section 467										
(45203)	45203	45210	45220	45230	45240	45250	45260	45270	45280	45299
lambda NC_001416.1 (43711)	AACGAATCAGCAACTCACAAAACGGGATCGTGAAAGAAATCAAAGGCGCGGACACGTTTCATCTTTGGTCATACGCCAGCAGTGAAACCACTCAAGTT									
SARS-CoV-2 NC_045512.2 (29904)	-----									
Section 468										
(45300)	45300	45310	45320	45330	45340	45350	45360	45370	45380	45396
lambda NC_001416.1 (43808)	TGCCAACCAAATGTATATCGATACCGGCGCAGTGTCTGCGGAAACCTAACATTGATTTCAGGTACAGGGAGAAGGCGCATGAGACTCGAAAGCGTAG									
SARS-CoV-2 NC_045512.2 (29904)	-----									
Section 469										
(45397)	45397	45410	45420	45430	45440	45450	45460	45470	45480	45493
lambda NC_001416.1 (43905)	CTAAATTTTCATTCGCCAAAAAGCCCGATGATGAGCGACTCACACGGGCCACGGCTTCTGACTCTCTTTCCGGTACTGATGTGATGGCTGCTATGGG									
SARS-CoV-2 NC_045512.2 (29904)	-----									

SARS-CoV-2 & lambda.apr

											Section 470	
(45494)	45494	45500	45510	45520	45530	45540	45550	45560	45570	45580	45590	
lambda NC_001416.1 (44002)	GATGGCGCAATCACAAGCCGGATTTCGGTATGGCTGCATTCTGCGGTAAGCACGAACTCAGCCAGAACGACAAACAAAAGGCTATCAACTATCTGATG											
SARS-CoV-2 NC_045512.2 (29904)	-----											
											Section 471	
(45591)	45591	45600	45610	45620	45630	45640	45650	45660	45670	45687		
lambda NC_001416.1 (44099)	CAATTTGCACACAAGGTATCGGGGAAATACCGTGGTGTGGCAAAGCTTGAAGGAAATACTAAGGCAAAGGTACTGCAAGTGCTCGCAACATTTCGCTT											
SARS-CoV-2 NC_045512.2 (29904)	-----											
											Section 472	
(45688)	45688	45700	45710	45720	45730	45740	45750	45760	45770	45784		
lambda NC_001416.1 (44196)	ATGCGGATTATTGCCGTAGTGCCGCGACGCCGGGGCAAGATGCAGAGATTGCCATGGTACAGGCCGTGCGGTTGATATTGCCAAAACAGAGCTGTG											
SARS-CoV-2 NC_045512.2 (29904)	-----											
											Section 473	
(45785)	45785	45790	45800	45810	45820	45830	45840	45850	45860	45870	45881	
lambda NC_001416.1 (44293)	GGGGAGAGTTGTCGAGAAAGAGTGCGGAAGATGCAAAGGCGTCGGCTATTCAAGGATGCCAGCAAGCGCAGCATATCGCGCTGTGACGATGCTAATC											
SARS-CoV-2 NC_045512.2 (29904)	-----											
											Section 474	
(45882)	45882	45890	45900	45910	45920	45930	45940	45950	45960	45978		
lambda NC_001416.1 (44390)	CCAAACCTTACCCAACCCACCTGGTCACGCACTGTTAAGCCGCTGTATGACGCTCTGGTGGTGAATGCCACAAAGAAGAGTCAATCGCAGACAACA											
SARS-CoV-2 NC_045512.2 (29904)	-----											
											Section 475	
(45979)	45979	45990	46000	46010	46020	46030	46040	46050	46060	46075		
lambda NC_001416.1 (44487)	TTTTGAATGCGGTCACACGTTAGCAGCATGATTGCCACGGATGGCAACATATTAACGGCATGATATTGACTTATTGAATAAAATTGGGTAAATTTGA											
SARS-CoV-2 NC_045512.2 (29904)	-----											
											Section 476	
(46076)	46076	46090	46100	46110	46120	46130	46140	46150	46160	46172		
lambda NC_001416.1 (44584)	CTCAACGATGGGTAAATTCGCTCGTTGTGGTAGTGAGATGAAAAGAGGCGGCGCTTACTACCGATTCCGCCTAGTTGGTCACTTCGACGTATCGTCT											
SARS-CoV-2 NC_045512.2 (29904)	-----											

## SARS-CoV-2 &amp; lambda.apr

											Section 477
	(46173)	46173	46180	46190	46200	46210	46220	46230	46240	46250	46269
lambda NC_001416.1 (44681)		GGAAC TCCAACCATCGCAGGCAGAGAGGTCTGCAAAATGCAATCCCGAAACAGTTGCGCAGGTAATAGTTAGAGCCTGCATAACGGTTTCGGGATTTT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 478
	(46270)	46270	46280	46290	46300	46310	46320	46330	46340	46350	46366
lambda NC_001416.1 (44778)		TTATATCTGCACAACAGGTAAGAGCATTGAGTCGATAATCGTGAAGAGTCGGCGAGCCTGGTTAGCCAGTGCTCTTTCCGTTGTGCTGAATTAAGCG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 479
	(46367)	46367	46380	46390	46400	46410	46420	46430	46440	46450	46463
lambda NC_001416.1 (44875)		AATACCGGAAGCAGAACCGGATCACCAAATGCGTACAGGCGTCATCGCCGCCAGCAACAGCACAACCCAACTGAGCCGTAGCCACTGTCTGTCTCT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 480
	(46464)	46464	46470	46480	46490	46500	46510	46520	46530	46540	46550 46560
lambda NC_001416.1 (44977)		GAATTCATTAGTAATAGTTACGCTGCGGCCTTTTACACATGACCTTCGTGAAAGCGGGTGGCAGGAGGTCGCGCTAACAACCTCCTGCCGTTTTGCC									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 481
	(46561)	46561	46570	46580	46590	46600	46610	46620	46630	46640	46657
lambda NC_001416.1 (45069)		CGTGCATATCGGTCACGAACAAATCTGATTACTAAACACAGTAGCCTGGATTGTCTCTATCAGTAATCGACCTTATTCCTAATTAAATAGAGCAAAT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 482
	(46658)	46658	46670	46680	46690	46700	46710	46720	46730	46740	46754
lambda NC_001416.1 (45166)		CCCCCTATTGGGGGTAAGACATGAAGATGCCAGAAAAACATGACCTGTTGGCCGCCATTCTCGCGGCAAAGGAACAAGGCATCGGGGCAATCCTTGC									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 483
	(46755)	46755	46760	46770	46780	46790	46800	46810	46820	46830	46840 46851
lambda NC_001416.1 (45263)		GTTTGCAATGGCGTACCTTCGCGGCAGATATAATGGCGGTGCGTTTACAAAAACAGTAATCGACGCAACGATGTGCGCCATTATCGCCTGGTTTCATT									
SARS-CoV-2 NC_045512.2 (29904)		-----									

## SARS-CoV-2 &amp; lambda.apr

											Section 484
	(46852)	46852	46860	46870	46880	46890	46900	46910	46920	46930	46948
lambda NC_001416.1 (45360)		CGTGACCTTCTCGACTTCGCCGGACTAAGTAGCAATCTCGCTTATATAACGAGCGTGTTTATCGGCTACATCGGTACTGACTCGATTGGTTCGCTTA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 485
	(46949)	46949	46960	46970	46980	46990	47000	47010	47020	47030	47045
lamhda NC_001416.1 (45457)		TCAAACGCTTCGCTGCTAAAAAAGCCGGAGTAGAAGATGGTAGAAATCAATAATCAACGTAAGGCGTTCCTCGATATGCTGGCGTGGTCGGAGGGAA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 486
	(47046)	47046	47060	47070	47080	47090	47100	47110	47120	47130	47142
lambda NC_001416.1 (45554)		CTGATAACGGACGTCAGAAAACCAGAAATCATGGTTATGACGTCATTGTAGGCGGAGAGCTATTTACTGATTACTCCGATCACCTCGCAAACCTTGT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 487
	(47143)	47143	47150	47160	47170	47180	47190	47200	47210	47220	47239
lamhda NC_001416.1 (45651)		CACGCTAAACCCAAAACCTCAAATCAACAGGCGCCGGACGCTACCAGCTTCTTTCCCGTTGGTGGGATGCCTACCGCAAGCAGCTTGGCCTGAAAGAC									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 488
	(47240)	47240	47250	47260	47270	47280	47290	47300	47310	47320	47336
lambda NC_001416.1 (45748)		TTCTCTCCGAAAAGTCAGGACGCTGTGGCATTGCAGCAGATTAAGGAGCGTGGCGCTTTACCTATGATTGATCGTGGTGATATCCGTCAGGCAATCG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 489
	(47337)	47337	47350	47360	47370	47380	47390	47400	47410	47420	47433
lambda NC_001416.1 (45845)		ACCGTTGCAGCAATATCTGGGCTTCACTGCCGGGCGCTGGTTATGGTCAGTTCGAGCATAAGGCTGACAGCCTGATTGCAAAATTCAAAGAAGCGGG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 490
	(47434)	47434	47440	47450	47460	47470	47480	47490	47500	47510	47520 47530
lamhda NC_001416.1 (45942)		CGGAACGGTCAGAGAGATTGATGTATGAGCAGAGTCACCGCGATTATCTCCGCTCTGGTTATCTGCATCATCGTCTGCCTGTCATGGGCTGTTAATC									
SARS-CoV-2 NC_045512.2 (29904)		-----									

SARS-CoV-2 & lambda.apr

											Section 491	
	(47531)	47531	47540	47550	47560	47570	47580	47590	47600	47610	47627	
lambda NC_001416.1 (46039)		ATTACCGTGATAACGCCATTACCTACAAAGCCCAGCGCGACAAAAATGCCAGAGAACTGAAGCTGGCGAACGCGGCAATTACTGACATGCAGATGCG										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 492	
	(47628)	47628	47640	47650	47660	47670	47680	47690	47700	47710	47724	
lambda NC_001416.1 (46136)		TCAGCGTGATGTTGCTGCGCTCGATGCAAAATACACGAAGGAGTTAGCTGATGCTAAAGCTGAAAATGATGCTCTGCGTGATGATGTTGCCGCTGGT										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 493	
	(47725)	47725	47730	47740	47750	47760	47770	47780	47790	47800	47810	47821
lambda NC_001416.1 (46233)		CGTCGTCGGTTGCACATCAAAGCAGTCTGTCAGTCAGTGCGTGAAGCCACCACCGCCTCCGGCGTGGATAATGCAGCCTCCCCCGACTGGCAGACA										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 494	
	(47822)	47822	47830	47840	47850	47860	47870	47880	47890	47900	47918	
lambda NC_001416.1 (46330)		CCGCTGAACGGGATTATTTACCCCTCAGAGAGAGGCTGATCACTATGCAAAAACAACCTGGAAGGAACCCAGAAGTATATTAATGAGCAGTGCAGATA										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 495	
	(47919)	47919	47930	47940	47950	47960	47970	47980	47990	48000	48015	
lambda NC_001416.1 (46427)		GAGTTGCCCATATCGATGGGCAACTCATGCAATTATTGTGAGCAATACACACGCGCTTCCAGCGGAGTATAAATGCCTAAAGTAATAAAACCGAGCA										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 496	
	(48016)	48016	48030	48040	48050	48060	48070	48080	48090	48100	48112	
lambda NC_001416.1 (46524)		ATCCATTTACGAATGTTTGCTGGGTTTCTGTTTTAACAAACATTTTCTGCGCCGCCACAAATTTTGGCTGCATCGACAGTTTTCTTCTGCCCAATTCC										
SARS-CoV-2 NC_045512.2 (29904)		-----										
											Section 497	
	(48113)	48113	48120	48130	48140	48150	48160	48170	48180	48190	48209	
lambda NC_001416.1 (46621)		AGAAACGAAGAAATGATGGGTGATGGTTTCCTTTGGTGCTACTGCTGCCGGTTTGTGTTTGAACAGTAAACGTCTGTTGAGCACATCCTGTAATAAGC										
SARS-CoV-2 NC_045512.2 (29904)		-----										

## SARS-CoV-2 &amp; lambda.apr

Section 498											
	(48210)	48210	48220	48230	48240	48250	48260	48270	48280	48290	48306
lambda NC_001416.1 (46718)		AGGGCCAGCGCAGTAGCGAGTAGCATTTTTTTCATGGTGTTATTCCCGATGCTTTTTGAAGTTCGCAGAATCGTATGTGTAGAAAATTAAACAAACC									
SARS-CoV-2 NC_045512.2 (29904)		-----									
Section 499											
	(48307)	48307	48320	48330	48340	48350	48360	48370	48380	48390	48403
lamhda NC_001416.1 (46815)		CTAAACAATGAGTTGAAATTTTCATATTGTTAATATTTATTAATGTATGTCAGGTGCGATGAATCGTCATTGTATTCCCGGATTAACATATGTCCACAG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
Section 500											
	(48404)	48404	48410	48420	48430	48440	48450	48460	48470	48480	48490 48500
lambda NC_001416.1 (46912)		CCCTGACGGGGAACCTTCTCTGCGGGAGTGTCGGGAATAATTAAACGATGCACACAGGGTTTAGCGCGTACACGTATTGCATTATGCCAACGCCCC									
SARS-CoV-2 NC_045512.2 (29904)		-----									
Section 501											
	(48501)	48501	48510	48520	48530	48540	48550	48560	48570	48580	48597
lamhda NC_001416.1 (47009)		GGTGCTGACACGGAAGAAACCGGACGTTATGATTTAGCGTGGAAGATTTGTGTAGTGTTCTGAATGCTCTCAGTAAATAGTAATGAATTATCAAAG									
SARS-CoV-2 NC_045512.2 (29904)		-----									
Section 502											
	(48598)	48598	48610	48620	48630	48640	48650	48660	48670	48680	48694
lambda NC_001416.1 (47106)		GTATAGTAATATCTTTTATGTTTCATGGATATTTGTAACCCATCGGAAACTCCTGCTTTAGCAAGATTTTCCCTGTATTGCTGAAATGTGATTTCTC									
SARS-CoV-2 NC_045512.2 (29904)		-----									
Section 503											
	(48695)	48695	48700	48710	48720	48730	48740	48750	48760	48770	48780 48791
lambda NC_001416.1 (47203)		TTGATTTCAACCTATCATAGGACGTTTCTATAAGATGCGTGTTTCTTGAGAATTTAACATTTACAACCTTTTTAAGTCCTTTTATTAACACGGTGTT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
Section 504											
	(48792)	48792	48800	48810	48820	48830	48840	48850	48860	48870	48888
lamhda NC_001416.1 (47300)		ATCGTTTTCTAACACGATGTGAATATTATCTGTGGCTAGATAGTAAATATAATGTGAGACGTTGTGACGTTTTAGTTTCAGAATAAAACAATTACAG									
SARS-CoV-2 NC_045512.2 (29904)		-----									



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											Section 505
	(48889)	48889	48900	48910	48920	48930	48940	48950	48960	48970	48985
lambda NC_001416.1 (47397)		TCTAAATCTTTTCGCACTTGATCGAATATTTCTTTAAAAATGGCAACCTGAGCCATTGGTAAAACCTTCCATGTGATACGAGGGCGCGTAGTTTGCA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 506
	(48986)	48986	49000	49010	49020	49030	49040	49050	49060	49070	49082
lamhda NC_001416.1 (47494)		TTATCGTTTTTTATCGTTTCAATCTGGTCTGACCTCCTTGTGTTTTGTTGATGATTTATGTCAAATATTAGGAATGTTTTCACTTAATAGTATTGGTT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 507
	(49083)	49083	49090	49100	49110	49120	49130	49140	49150	49160	49179
lambda NC_001416.1 (47591)		GCGTAACAAAGTGCGGTCTGCTGGCATTCTGGAGGGAAATACAACCGACAGATGTATGTAAGGCCAACGTGCTCAAATCTTCATACAGAAAGATT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 508
	(49180)	49180	49190	49200	49210	49220	49230	49240	49250	49260	49276
lamhda NC_001416.1 (47688)		GAAGTAATATTTTAACCGCTAGATGAAGAGCAAGCGCATGGAGCGACAAAATGAATAAAGAACAATCTGCTGATGATCCCTCCGTGGATCTGATT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 509
	(49277)	49277	49290	49300	49310	49320	49330	49340	49350	49360	49373
lambda NC_001416.1 (47785)		TGTAAAAAATATGCTTAATAGCACCATTCTATGAGTTACCCTGATGTTGTAATTGCATGTATAGAACATAAGGTGTCTCTGGAAGCATT									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 510
	(49374)	49374	49380	49390	49400	49410	49420	49430	49440	49450	49460 49470
lambda NC_001416.1 (47882)		ATTGAGGCAGCGTTGGTGAAGCACGATAATAATATGAAGGATTATTCCTGGTGGTTGACTGATCACCATAACTGCTAATCATTCAA									
SARS-CoV-2 NC_045512.2 (29904)		-----									
											Section 511
	(49471)	49471	49480	49490	49500	49510	49520	49530	49540	49550	49567
lamhda NC_001416.1 (47979)		CTGTGACAGAGCCAACACGCGAGTCTGTCACTGTTCAGGAAAGTGGTAAACTGCAACTCAATTACTGCAATGCCCTCGTAATTAAGTGAATTTACAAT									
SARS-CoV-2 NC_045512.2 (29904)		-----									

## SARS-CoV-2 &amp; lambda.apr

											Section 512						
	(49568)	49568	49580	49590	49600	49610	49620	49630	49640	49650	49664						
lambda NC_001416.1 (48076)		ATCGTCCTGTTTCGGAGGGAAGAACGCGGGATGTTTCATTCTTCATCACTTTTAATTGATGTATATGCTCTCTTTTCTGACGTTAGTCTCCGACGGCAG															
SARS-CoV-2 NC_045512.2 (29904)		-----															
											Section 513						
	(49665)	49665	49670	49680	49690	49700	49710	49720	49730	49740	49750	49761					
lamhda NC_001416.1 (48173)		GCTTCAATGACCCAGGCTGAGAAATTCCCGGACCCCTTTTGTCTCAAGAGCGATGTTAATTTGTTCAATCATTTGGTTAGGAAAGCGGATGTTGCGGG															
SARS-CoV-2 NC_045512.2 (29904)		-----															
											Section 514						
	(49762)	49762	49770	49780	49790	49800	49810	49820	49830	49840	49858						
lambda NC_001416.1 (48270)		TTGTTGTTCTGCGGGTTCTGTTCTTCGTTGACATGAGGTTGCCCCGTATTCAGTGTCGCTGATTTGTATTGTCTGAAGTTGTTTTTACGTTAAGTTG															
SARS-CoV-2 NC_045512.2 (29904)		-----															
											Section 515						
	(49859)	49859	49870	49880	49890	49900	49910	49920	49930	49940	49955						
lamhda NC_001416.1 (48367)		ATGCAGATCAATTAATACGATACCTGCGTCATAATTGATTATTTGACGTGGTTTGATGGCCTCCACGCACGTTGTGATATGTAGATGATAATCATT															
SARS-CoV-2 NC_045512.2 (29904)		-----															
											Section 516						
	(49956)	49956	49970	49980	49994												
lambda NC_001416.1 (48464)		TCACTTTACGGGTCCTTTCCGGTGATCCGACAGGTTACG															
SARS-CoV-2 NC_045512.2 (29904)		-----															