BLAST analysis SARS-Cov-2 against Streptococcus Pneumoniae

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Thanks to Bioinformatics Team, RayBiotech.

September 09, 2022

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1 Introduction

The study was performed by blastn analysis with SARS-Cov-2 against Streptococcus pneumoniae H17 genomic sequences. Considering there is no hitting when blast analysis with whole length of SARS-Cov-2, we spliced the SARS-Cov-2 virus genome sequence into segments of 1,000bp with sliding windows of 50bp, and then conducted blast analysis on these segments against sequences of Streptococcus pneumoniae.

2 Methods

2.1 SARS-Cov-2 genome sequence splicing

The genome sequence of SARS-Cov-2 virus were spliced into segments of 1,000bp length, with starting positions shifting from 1 to 950 at interval of 50bp. In total 20 sets of segments were created.

2.2 Blast analysis

The 20 sets of SARS-Cov-2 genome segments were compared against sequences of Streptococcus pneumoniae downloaded from NCBI (https://ftp.ncbi.nlm.nih.gov/genomes/all/GCF/002/076/835/GCF_002076835.1_ASM207683v1/GCF_002076835.1_ASM207683v1_gen omic.fna.gz) with blastn tools (2.13.0+) on a linux server, respectively.

2.3 Results retrieving and sorting

The hits/alignments on genome of Streptococcus pneumoniae reported by the blast analysis were retrieved with customized python scripts. Common hits across different sets of SARS-Cov-2 genome segments were merged.

3 Results

There are 590 hits reported by blast analysis between 576 SARS-Cov-2 segments and 576 Streptococcus pneumoniae sequences, after merging all the blast results from 20 sets of SARS-Cov-2 genome segments.

Table 1: Number of hits by segments of SARS-Cov-2 virus genome sequences

SARS-Cov-2	sequence	hits
NC_045512.2 SARS-Cov-2 1693-1712	TTTGGCATCTTTTTCTGCTT	2
NC_045512.2 SARS-Cov-2 22895-22909	GTTGGTGGTAATTAT	2
NC_045512.2 SARS-Cov-2 4736-4753	ACTTCTTCTTCTAAAACA	2
NC_045512.2 SARS-Cov-2 29846-29858	TTTAATAGCTTCT	2
NC_045512.2 SARS-Cov-2 3404-3418	GAAGAAGCTAAAAAG	2
NC_045512.2 SARS-Cov-2 13631-13650	ATTTAATTGATTCTTACTTT	2
NC_045512.2 SARS-Cov-2 11985-11999	CCTTTGAAAAAATGG	2
NC_045512.2 SARS-Cov-2 29846-29859	TTTAATAGCTTCTT	2
NC_045512.2 SARS-Cov-2 18220-18234	AAAATGAATTATCAA	2
NC_045512.2 SARS-Cov-2 29810-29822	GTAAAATTAATTT	2
NC_045512.2 SARS-Cov-2 5972-5986	GACAATTCTTATTTC	2
NC_045512.2 SARS-Cov-2 2017-2034	GATGTTCACATCTGATTT	2
NC_045512.2 SARS-Cov-2 7309-7327	ATTGTTTTTCAGCTATTTT	2
NC_045512.2 SARS-Cov-2 29856-29867	TCTTAGGAGAAT	2
NC_045512.2 SARS-Cov-2 1440-1455	GCTTGAAAACCATTCT	1
NC_045512.2 SARS-Cov-2 25762-25789	ATAATGAGGCTTTGGCTTTGCTGGAAAT	1
NC_045512.2 SARS-Cov-2 5592-5610	ATGAACAATTTAAGAAAGG	1
NC_045512.2 SARS-Cov-2 29802-29814	CCTAATGTGTAAA	1
NC_045512.2 SARS-Cov-2 21073-21087	GTTACAAAAGAAAAT	1
NC_045512.2 SARS-Cov-2 7915-7929	AGAATCATCTGCAAA	1
NC_045512.2 SARS-Cov-2 28969-28983	CAAAATGTCTGGTAA	1
NC_045512.2 SARS-Cov-2 13564-13578	GTAGCTGGTTTTGCT	1
NC_045512.2 SARS-Cov-2 2800-2819	TGATGAAAGGATTGATAAAG	1
NC_045512.2 SARS-Cov-2 20867-20881	TTGGTGCTGGTTCTG	1
NC_045512.2 SARS-Cov-2 3940-3959	AAAACAAGATGATAAGAAAA	1
NC_045512.2 SARS-Cov-2 1620-1635	AAATACTCCAAAAAGA	1
NC_045512.2 SARS-Cov-2 1131-1147	AAAAGAAAAAGCTTGAT	1
NC_045512.2 SARS-Cov-2 8822-8841	TTGATTGCTGCAGTCATAAC	1
NC_045512.2 SARS-Cov-2 26291-26315	GCGTACTT–CTTTTTCTTGCTTTCGT	1
NC_045512.2 SARS-Cov-2 5279-5299	AACAACTGTTATCTTGCCACT	1
NC_045512.2 SARS-Cov-2 18999-19023	ATTATTAG-CAGACAAATTCCCAGTT	1
NC_045512.2 SARS-Cov-2 29805-29817	AATGTGTAAAATT	1
NC_045512.2 SARS-Cov-2 16626-16640	CAAGCTTTTTGCAGC	1
NC_045512.2 SARS-Cov-2 8561-8583	GTTAATAATTGGTTGAAGCAGTT	1
NC_045512.2 SARS-Cov-2 12195-12214	TTAAAAAGTTGAAGAAGTCT	1
NC_045512.2 SARS-Cov-2 23951-23970	TTTGGTGGTTTTAATTTTTC	1
NC_045512.2 SARS-Cov-2 12814-12842	ACTGTT-ATCCGATTTACAGGATTTGAAAT	1
NC_045512.2 SARS-Cov-2 8297-8311	AACAAAGTTGAAAAC	1
NC_045512.2 SARS-Cov-2 29463-29481	CTGCAGATTTGGATGATTT	1
NC_045512.2 SARS-Cov-2 8055-8069	CGTTTTCATCAACTT	1
NC_045512.2 SARS-Cov-2 27261-27275	GACTTTTAAAGTTTC	1
NC_045512.2 SARS-Cov-2 15608-15648	TACAACACAGACTTTATGAGT-GTCTCTATAGAAATAGAGAT	1
NC_045512.2 SARS-Cov-2 12267-12287	TGGAAAAGATGGCTGATCAAG	1
NC_045512.2 SARS-Cov-2 14330-14349	ATTGTGTTAACTGTTTGGAT	1
NC_045512.2 SARS-Cov-2 15157-15176	CAAAAATTATTGAAATCAAT	1
NC_045512.2 SARS-Cov-2 24142-24156	TTTGCCACCTTTGCT	1
NC_045512.2 SARS-Cov-2 21947-22005	AAAGTCTGTGAATTTCAATTTTGTAATGATCCATTTTTGGGTGTTTATTACCACAAAAA	1
NC_045512.2 SARS-Cov-2 727-741	TGAAGATTTTCAAGA	1
NC_045512.2 SARS-Cov-2 14857-14872	GTTGAAGTTGTTGATA	1
NC_045512.2 SARS-Cov-2 693-713	TTGACTTAGGCGACGAGCTTG	1
NC_045512.2 SARS-Cov-2 8237-8251	TCACATCAATCTGAC	1
NC_045512.2 SARS-Cov-2 8731-8752	TACAGATACTTGTTTTGCTAAC	1
NC_045512.2 SARS-Cov-2 533-555	GCAGAACTCGAAGGCATTCAGTA	1
NC_045512.2 SARS-Cov-2 20251-20266	ATTGATTTCTTAGAAT	1
NC_045512.2 SARS-Cov-2 12054-12073	TTTGTGAAGAAATGCTGGAC	1
NC_045512.2 SARS-Cov-2 4921-4935	CTTTGACAATCTTAA	1
NC_045512.2 SARS-Cov-2 19354-19368	TTAAAACAATTACCA	1
NC_045512.2 SARS-Cov-2 28088-28102	TGGTTCTAAATCACC	1
NC_045512.2 SARS-Cov-2 29859-29873	TAGGAGAATGACaaa	1
NC_045512.2 SARS-Cov-2 28517-28531	GACCAAATTGGCTAC	1
NC_045512.2 SARS-Cov-2 1024-1041	ACCTTTTGAAATTAAATT	1
NC_045512.2 SARS-Cov-2 21670-21685	TTATTACCCTGACAAA	1
NC_045512.2 SARS-Cov-2 14830-14844	TGTGATATCAGACAA	1
NC_045512.2 SARS-Cov-2 1698-1712	CATCTTTTTCTGCTT	1
NC_045512.2 SARS-Cov-2 7337-7358	TTTATTAGTAATTCTTGGCTTA	1
NC_045512.2 SARS-Cov-2 20358-20375	TGGTTTACATCTACTGAT	1
NC_045512.2 SARS-Cov-2 27900-27914	TTTCTTGTTTTCTTA	1
NC_045512.2 SARS-Cov-2 13607-13627	TCCAAGAAAAGGACGAAGATG	1
NC_045512.2 SARS-Cov-2 21223-21238	TGGTGGACAGCCTTTG	1
NC_045512.2 SARS-Cov-2 24943-24963	TGTTGTAATAGGAATTGTCAA	1
NC_045512.2 SARS-Cov-2 20436-20454	CAGTACAGTTAAAAACTAT	1
NC_045512.2 SARS-Cov-2 7511-7533	AATAGAGCAACAAGAGTCGAATG	1
NC_045512.2 SARS-Cov-2 16528-16551	GTTGGTAGCGATAATGTTACTGAC	1
NC_045512.2 SARS-Cov-2 24619-24639	AGCTTCTGCTAATCTTGCTGC	1
NC_045512.2 SARS-Cov-2 20145-20159	GTTCAATTATTATAA	1
NC_045512.2 SARS-Cov-2 1618-1647	TGAAATACTCCAAAAAGAGAAAGTCA-ACAT	1
NC_045512.2 SARS-Cov-2 22393-22412	AAAATATAATGAAAATGGAA	1
NC_045512.2 SARS-Cov-2 25443-25458	AGGTGAAATCAAGGAT	1

Table 1: Number of hits by segments of SARS-Cov-2 virus genome sequences *(continued)*

SARS-Cov-2	sequence	hits
NC_045512.2 SARS-Cov-2 9350-9379	AATATGTTTACACCACTAATTCAACCTATT	1
NC_045512.2 SARS-Cov-2 18824-18838	AAGTCCATGGTAATG	1
NC_045512.2 SARS-Cov-2 2567-2591	CAAC-CTACTAGTGAAGCTGTTGAAG	1
NC_045512.2 SARS-Cov-2 27336-27353	TGAGAATAAATATTCTCA	1
NC_045512.2 SARS-Cov-2 13938-13959	AGAAAACCCAGATATATTACGC	1
NC_045512.2 SARS-Cov-2 17680-17694	CATGATGTTTCATCT	1
NC_045512.2 SARS-Cov-2 28811-28825	AGTCAAGCCTCTTCT	1
NC_045512.2 SARS-Cov-2 6781-6800	CTTTACTTTATTGCTACAAT	1
NC_045512.2 SARS-Cov-2 3477-3497	TTGCAGGAGCCTTAAATAAGG	1
NC_045512.2 SARS-Cov-2 26551-26568	TTGAAGAGCTTAAAAAGC	1
NC_045512.2 SARS-Cov-2 29855-29866	TTCTTAGGAGAA	1
NC_045512.2 SARS-Cov-2 6615-6635	TAGGTTTGAAAACCCTTGCTA	1
NC_045512.2 SARS-Cov-2 29285-29299	AAATTGGATGACAAA	1
NC_045512.2 SARS-Cov-2 27577-27609	CAATTTGCTTTTGCTTGTCCTG-ACGGCGTAAAA	1
NC_045512.2 SARS-Cov-2 12192-12211	TTCTTAAAAAGTTGAAGAAG	1
NC_045512.2 SARS-Cov-2 21546-21564	TAACAACTAAACGAACAAT	1
NC_045512.2 SARS-Cov-2 26114-26131	AAGAACATGTCCAAATTC	1
NC_045512.2 SARS-Cov-2 26815-26839	CTTCTTTCAGACTGTTTGCGCGTAC	1
NC_045512.2 SARS-Cov-2 15148-15162	CAGTTTCATCAAAAA	1
NC_045512.2 SARS-Cov-2 7822-7848	TCATTTTGTTAACTT-AGACAACCTGAG	1
NC_045512.2 SARS-Cov-2 11762-11782	AATAGCATAGATGCCTTCAAA	1
NC_045512.2 SARS-Cov-2 1632-1651	AAGAGAAAGTCAACATCAAT	1
NC_045512.2 SARS-Cov-2 19759-19774	ACAACATTACCTGTTA	1
NC_045512.2 SARS-Cov-2 9781-9800	TAGTACTTTTGAAGAAGCTG	1
NC_045512.2 SARS-Cov-2 16454-16477	AATCACATAAACCACCCATTAGTT	1
NC_045512.2 SARS-Cov-2 17086-17101	CCTGGTACTGGTAAGA	1
NC_045512.2 SARS-Cov-2 23896-23910	CCAAGAAGTTTTTGC	1
NC_045512.2 SARS-Cov-2 3093-3115	CATCAACTCAATATGAGTATGGT	1
NC_045512.2 SARS-Cov-2 2790-2817	CTTTTGAACTTGATGAAAGGATTGATAA	1
NC_045512.2 SARS-Cov-2 3918-3938	GTAAACCTTCAGTTGAACAGA	1
NC_045512.2 SARS-Cov-2 5862-5881	TTTTCTACAAAGAAAACAGT	1
NC_045512.2 SARS-Cov-2 27577-27599	CAATTTGCTTTTGCTTGTCCTGA	1
NC_045512.2 SARS-Cov-2 21437-21452	TGTCTTTAAAAGAAGG	1
NC_045512.2 SARS-Cov-2 3176-3196	CCTGAAGAAGAGCAAGAAGAA	1
NC_045512.2 SARS-Cov-2 443-457	GTTTTGCCTCAACTT	1
NC_045512.2 SARS-Cov-2 17126-17145	TCTACTACCCTTCTGCTCGC	1
NC_045512.2 SARS-Cov-2 7290-7304	GATTGGCTGCAATCA	1
NC_045512.2 SARS-Cov-2 15905-15922	AGGGTGATGATTATGTGT	1
NC_045512.2 SARS-Cov-2 7791-7811	GTCAAAAGACTTATGAAAGAC	1
NC_045512.2 SARS-Cov-2 17436-17451	CGACCCTGCTCAATTA	1
NC_045512.2 SARS-Cov-2 9321-9335	GTGGTGTAGATGCTG	1
NC_045512.2 SARS-Cov-2 3118-3140	TGAAGATGATTACCAAGGTAAAC	1
NC_045512.2 SARS-Cov-2 7897-7923	TGGTAAATCAAAATG-TGAAGAATCATC	1
NC_045512.2 SARS-Cov-2 23519-23534	GCTGAACATGTCAACA	1
NC_045512.2 SARS-Cov-2 4916-4930	ATCACCTTTGACAAT	1
NC_045512.2 SARS-Cov-2 24562-24583	ACTTCAAAGTTTGCAGACATAT	1
NC_045512.2 SARS-Cov-2 8731-8750	TACAGATACTTGTTTTGCTA	1
NC_045512.2 SARS-Cov-2 3422-3446	AAACCAACAGTGGTTGTTAATGCAG	1
NC_045512.2 SARS-Cov-2 19713-19738	TTACACAAAAGTTGATGGTGTTGATG	1
NC_045512.2 SARS-Cov-2 2121-2140	CTGTTTATGAAAAACTCAAA	1
NC_045512.2 SARS-Cov-2 2804-2839	GAAAGGATTGATAAAGTACTTAATGAGAAGTGCTCT	1
NC_045512.2 SARS-Cov-2 19906-19924	ATATCTACTATTGGTGTTT	1
NC_045512.2 SARS-Cov-2 22934-22962	AAGTCTAATCTCAAACCTTTTGAGAGAGA	1
NC_045512.2 SARS-Cov-2 22158-22180	GTTATTTTAAAATATATTCTAAG	1
NC_045512.2 SARS-Cov-2 2913-2930	TGCAACCAGTATCTGAAT	1
NC_045512.2 SARS-Cov-2 18627-18642	GTATTTTGTGAAAATA	1
NC_045512.2 SARS-Cov-2 11981-11995	GAAGCCTTTGAAAAA	1
NC_045512.2 SARS-Cov-2 11418-11433	TTTATAAAGTTTATTA	1
NC_045512.2 SARS-Cov-2 12494-12513	TATAACACATATAAAAATAC	1
NC_045512.2 SARS-Cov-2 13888-13902	AATTGTTGTGATGAT	1
NC_045512.2 SARS-Cov-2 13924-13947	TGGTATGATTTTGTAGAAAACCCA	1
NC_045512.2 SARS-Cov-2 7063-7077	CAGAGAAGGCTATTT	1
NC_045512.2 SARS-Cov-2 12933-12954	CTAAAGTGAAGTATTTATACTT	1
NC_045512.2 SARS-Cov-2 12060-12074	AAGAAATGCTGGACA	1
NC_045512.2 SARS-Cov-2 12269-12289	GAAAAGATGGCTGATCAAGCT	1
NC_045512.2 SARS-Cov-2 3942-3965	AACAAGATGATAAGAAAATCAAAG	1
NC_045512.2 SARS-Cov-2 11988-12019	TTGAAAAAATGGTTTCACTACTTTCTGTTTTG	1
NC_045512.2 SARS-Cov-2 18128-18148	ACACTAAATTCAAAACTGAAG	1
NC_045512.2 SARS-Cov-2 14769-14787	TCAGGATGGTAATGCTGCT	1
NC_045512.2 SARS-Cov-2 12004-12023	ACTACTTTCTGTTTTGCTTT	1
NC_045512.2 SARS-Cov-2 28-47	CAAACCAACCAACTTTCGAT	1
NC_045512.2 SARS-Cov-2 4204-4230	AGCGAAAGCTTTGAGAAAAGT–GCCAAC	1
NC_045512.2 SARS-Cov-2 4749-4763	AAACACCTGAAGAAC	1
NC_045512.2 SARS-Cov-2 7569-7583	ATGTCTATGCTAATG	1
NC_045512.2 SARS-Cov-2 12993-13012	TTGGTAGTTTAGCTGCCACA	1
NC_045512.2 SARS-Cov-2 14981-15013	TTTATTATGATTCAATGAGTTATGAGGATCAAG	1
NC_045512.2 SARS-Cov-2 22823-22837	TATAATTATAAATTA	1
NC_045512.2 SARS-Cov-2 3875-3895	GCTGAGATTCCTAAAGAGGAA	1
NC_045512.2 SARS-Cov-2 20151-20168	TTATTATAAGAAAGTTGA	1
NC_045512.2 SARS-Cov-2 28953-28978	TGAACCAGCTTGAGAGCAAAATGTCT	1
NC_045512.2 SARS-Cov-2 19986-20009	TTTTGATGGTAGAGTTGATGGTCA	1
NC_045512.2 SARS-Cov-2 29816-29839	TTAATTTTAGTAGTGCTATCCCCA	1
NC_045512.2 SARS-Cov-2 7652-7670	ACATTTATTAGTGATGAAG	1
NC_045512.2 SARS-Cov-2 8217-8239	TTGTTGAATGTCTTAAATTGTCA	1
NC_045512.2 SARS-Cov-2 8187-8201	TTGTTGATTCAGATG	1
NC_045512.2 SARS-Cov-2 9829-9848	AATGTATCTAAAGTTGCGTA	1
NC_045512.2 SARS-Cov-2 4218-4232	GAAAAGTGCCAACAG	1
NC_045512.2 SARS-Cov-2 15898-15915	GTTAAACAGGGTGATGAT	1
NC_045512.2 SARS-Cov-2 1530-1549	ATTGGGTTCCACGTGCTAGC	1

Table 1: Number of hits by segments of SARS-Cov-2 virus genome sequences *(continued)*

SARS-Cov-2	sequence	hits
NC_045512.2 SARS-Cov-2 21725-21744	TTCTTACCTTTCTTTTCCAA	1
NC_045512.2 SARS-Cov-2 14451-14465	TGTTCCATTTGTAGT	1
NC_045512.2 SARS-Cov-2 28885-28903	AACTTCTCCTGCTAGAATG	1
NC_045512.2 SARS-Cov-2 23166-23189	AAAACAAATGTGTCAATTTCAACT	1
NC_045512.2 SARS-Cov-2 20566-20585	AAGGTTGTCAAAGTGACTAT	1
NC_045512.2 SARS-Cov-2 10603-10617	ACCTTTTGTTGACAG	1
NC_045512.2 SARS-Cov-2 18628-18645	TATTTTGTGAAAATAGGA	1
NC_045512.2 SARS-Cov-2 17042-17064	ATCAAAAGG–TTGGTATGCAAAAG	1
NC_045512.2 SARS-Cov-2 15117-15131	TGTCTCTATCTGTAG	1
NC_045512.2 SARS-Cov-2 5998-6017	AATTGATCTTGTACCAAACC	1
NC_045512.2 SARS-Cov-2 13701-13720	TAATTTACTTAAGGATTGTC	1
NC_045512.2 SARS-Cov-2 23986-24004	TCCATCAAAACCAAGCAAG	1
NC_045512.2 SARS-Cov-2 3945-3964	AAGATGATAAGAAAATCAAA	1
NC_045512.2 SARS-Cov-2 2297-2315	TTCTTTAAGCTTGTAAATA	1
NC_045512.2 SARS-Cov-2 12615-12634	ACAATTCACCTAATTTAGCA	1
NC_045512.2 SARS-Cov-2 10651-10665	TATTACAGTTAATGT	1
NC_045512.2 SARS-Cov-2 17828-17849	AAACTGTTGATTCATCACAGGG	1
NC_045512.2 SARS-Cov-2 8750-8764	AACAAACATGCTGAT	1
NC_045512.2 SARS-Cov-2 11035-11054	ACTTTTAGTTTTAGTCCAGA	1
NC_045512.2 SARS-Cov-2 1623-1643	TACTCCAAAAAGAGAAAGTCA	1
NC_045512.2 SARS-Cov-2 1277-1296	AAAGCCACTTGCGAATTTTG	1
NC_045512.2 SARS-Cov-2 12398-12417	CTCAACAACATTATCAACAA	1
NC_045512.2 SARS-Cov-2 2808-2827	GGATTGATAAAGTACTTAAT	1
NC_045512.2 SARS-Cov-2 16055-16072	ATCCTAATCAGGAGTATG	1
NC_045512.2 SARS-Cov-2 29844-29864	ATTTTAATAGCTTCTTAGGAG	1
NC_045512.2 SARS-Cov-2 2574-2588	CTAGTGAAGCTGTTG	1
NC_045512.2 SARS-Cov-2 29378-29397	AAAAAGGACAAAAAGAAGAA	1
NC_045512.2 SARS-Cov-2 5824-5838	TACAAAGTCCTCAGA	1
NC_045512.2 SARS-Cov-2 3181-3213	AGAAGAGCAAGAAGAA-GATTGGTTAGATGATGA	1
NC_045512.2 SARS-Cov-2 18453-18467	TAAACCACCGCCTGG	1
NC_045512.2 SARS-Cov-2 12881-12895	TATACAGAACTGGAA	1
NC_045512.2 SARS-Cov-2 1258-1277	GCAGACGGGCGATTTTGTTA	1
NC_045512.2 SARS-Cov-2 1123-1137	AAGGGTTGAAAAGAA	1
NC_045512.2 SARS-Cov-2 24278-24292	TTTAATGGTATTGGA	1
NC_045512.2 SARS-Cov-2 6515-6532	TTAAAAATTACAGAAGAG	1
NC_045512.2 SARS-Cov-2 16500-16518	AGTTTTTGGTTTATATAAA	1
NC_045512.2 SARS-Cov-2 11141-11156	ATGATGTTTGTCAAAC	1
NC_045512.2 SARS-Cov-2 25921-25953	AGTCCTATTTCTG—AACATGACTACCAGATTGGT	1
NC_045512.2 SARS-Cov-2 3677-3692	TTTAATCAGCACGAAG	1
NC_045512.2 SARS-Cov-2 11478-11495	TCTCTGTTACTTCTAACT	1
NC_045512.2 SARS-Cov-2 25007-25032	AAGGAGGAG-TTAGATAAATATTTTAA	1
NC_045512.2 SARS-Cov-2 23069-23083	GTTGGTTACCAACCA	1
NC_045512.2 SARS-Cov-2 14859-14874	TGAAGTTGTTGATAAG	1
NC_045512.2 SARS-Cov-2 27336-27350	TGAGAATAAATATTC	1
NC_045512.2 SARS-Cov-2 27753-27778	AGAATGATTGAACTTTCATTAATTGA	1
NC_045512.2 SARS-Cov-2 12230-12246	TCTGAATTTGACCGTGA	1
NC_045512.2 SARS-Cov-2 29532-29548	AAACTCATGCAGACCAC	1
NC_045512.2 SARS-Cov-2 11838-11861	TACAGTCTAAAATGTCAGATGTAA	1
NC_045512.2 SARS-Cov-2 24627-24647	CTAATCTTGCTGCTACTAAAA	1
NC_045512.2 SARS-Cov-2 1788-1817	ATTTTAAAGTTACAAAAGGAAAAGCTAAAA	1
NC_045512.2 SARS-Cov-2 15912-15937	TGATTATGTGTA-CCTTCCTTACCCAG	1
NC_045512.2 SARS-Cov-2 22073-22090	GTCTCTCAGCCTTTTCTT	1
NC_045512.2 SARS-Cov-2 5859-5874	ATGTTTTCTACAAAGA	1
NC_045512.2 SARS-Cov-2 17748-17763	TGCTTGGAGAAAAGCT	1
NC_045512.2 SARS-Cov-2 17008-17023	ATCTCAGATGAGTTTT	1
NC_045512.2 SARS-Cov-2 730-744	AGATTTTCAAGAAAA	1
NC_045512.2 SARS-Cov-2 20407-20427	TTTGAATTAGAAGATTTTATT	1
NC_045512.2 SARS-Cov-2 22118-22137	TTCAAAAATCTTAGGGAATT	1
NC_045512.2 SARS-Cov-2 11848-11862	AATGTCAGATGTAAA	1
NC_045512.2 SARS-Cov-2 29775-29791	TAGGGAGAGCTGCCTAT	1
NC_045512.2 SARS-Cov-2 21317-21339	ATGGTTATGTCATGCATGCAAAT	1
NC_045512.2 SARS-Cov-2 9702-9721	TTTGTATTTCCACAAAGCAT	1
NC_045512.2 SARS-Cov-2 25078-25095	TAATGCTTCAGTTGTAAA	1
NC_045512.2 SARS-Cov-2 19743-19762	ATTGTTTGAAAATAAAACAA	1
NC_045512.2 SARS-Cov-2 8160-8193	CTTTTATTTCAGCAGCTCGGCAAGGGTTTGTTGA	1
NC_045512.2 SARS-Cov-2 22803-22817	AAACTGGAAAGATTG	1
NC_045512.2 SARS-Cov-2 15154-15174	CATCAAA–AATTATTGAAATCA	1
NC_045512.2 SARS-Cov-2 22392-22409	TAAAATATAATGAAAATG	1
NC_045512.2 SARS-Cov-2 9811-9830	CTTTTTGTTAAATAAAGAAA	1
NC_045512.2 SARS-Cov-2 313-327	CAGTTTGCCTGTTTT	1
NC_045512.2 SARS-Cov-2 1578-1593	TTGTTGGAGAAGGTTC	1
NC_045512.2 SARS-Cov-2 513-531	ATGTTATGGTTGAGCTGGT	1
NC_045512.2 SARS-Cov-2 6707-6725	AAAGTTGTTAGTACAACTA	1
NC_045512.2 SARS-Cov-2 26201-26216	CTACTAGCGTGCCTTT	1
NC_045512.2 SARS-Cov-2 3258-3282	AGACAACTACTATTCAAACAATTGT	1
NC_045512.2 SARS-Cov-2 29821-29836	TTTAGTAGTGCTATCC	1
NC_045512.2 SARS-Cov-2 26096-26115	AAATTGTTGATGAGCCTGAA	1
NC_045512.2 SARS-Cov-2 10067-10081	AAAATGGCATTCCCA	1
NC_045512.2 SARS-Cov-2 2236-2250	TGAAATTGTCGGTGG	1
NC_045512.2 SARS-Cov-2 9784-9801	TACTTTTGAAGAAGCTGC	1
NC_045512.2 SARS-Cov-2 27257-27274	TGAGGACTTTTAAAGTTT	1
NC_045512.2 SARS-Cov-2 29698-29717	TTAGGGAGGACTTGAAAGAG	1
NC_045512.2 SARS-Cov-2 5104-5119	TGAAGGTAAAACATTT	1
NC_045512.2 SARS-Cov-2 29306-29325	AATTTCAAAGATCAAGTCAT	1
NC_045512.2 SARS-Cov-2 3168-3185	CTCTTCAACCTGAAGAAG	1
NC_045512.2 SARS-Cov-2 17820-17839	ACCAACTCAAACTGTTGATT	1
NC_045512.2 SARS-Cov-2 21818-21837	TTTAATGATGGTGTTTATTT	1
NC_045512.2 SARS-Cov-2 4042-4064	TAATGGCAATCTTCATCCAGATT	1
NC_045512.2 SARS-Cov-2 8697-8714	CTATTGATGGTGGTGTCA	1

Table 1: Number of hits by segments of SARS-Cov-2 virus genome sequences *(continued)*

SARS-Cov-2	sequence	hits
NC_045512.2 SARS-Cov-2 1605-1627	ATGACAACCTTCTTGAAATACTC	1
NC_045512.2 SARS-Cov-2 22957-22979	GAGAGATATTTCAA—CTGAAATCT	1
NC_045512.2 SARS-Cov-2 17258-17275	AGTGTTTTGATAAATTCA	1
NC_045512.2 SARS-Cov-2 23986-24000	TCCATCAAAACCAAG	1
NC_045512.2 SARS-Cov-2 14587-14612	GCTTCTGGTAATCTATTACTAGATAA	1
NC_045512.2 SARS-Cov-2 16971-16985	CTATGTTAGAATTAC	1
NC_045512.2 SARS-Cov-2 28018-28032	ATTCTAAATGGTATA	1
NC_045512.2 SARS-Cov-2 13202-13220	GAAGCCAATATGGATCAAG	1
NC_045512.2 SARS-Cov-2 12835-12850	TTTGAAATGGGCTAGA	1
NC_045512.2 SARS-Cov-2 23323-23337	TACACCATGTTCTTT	1
NC_045512.2 SARS-Cov-2 19561-19575	TTGTGGGTTTACAAA	1
NC_045512.2 SARS-Cov-2 27023-27038	AATCACTGTTGCTACA	1
NC_045512.2 SARS-Cov-2 6414-6428	AAGTAGTGGAAAATC	1
NC_045512.2 SARS-Cov-2 25089-25108	TTGTAAACATTCAAAAAGAA	1
NC_045512.2 SARS-Cov-2 16501-16518	GTTTTTGGTTTATATAAA	1
NC_045512.2 SARS-Cov-2 6951-6966	TTATAATTTGGTTTTT	1
NC_045512.2 SARS-Cov-2 23996-24010	CCAAGCAAGAGGTCA	1
NC_045512.2 SARS-Cov-2 23618-23648	AGTGTAGCTAGTCAATCCATCATTGCCTACA	1
NC_045512.2 SARS-Cov-2 16537-16555	GATAATGTTACTGACTTTA	1
NC_045512.2 SARS-Cov-2 881-908	GCACGTGCTGGTAAAGCTTCATGCACTT	1
NC_045512.2 SARS-Cov-2 19119-19136	TTATAAAATAGAAGAATT	1
NC_045512.2 SARS-Cov-2 29786-29799	GCCTATATGGAAGA	1
NC_045512.2 SARS-Cov-2 5915-5931	TTGGATGGTGTTGTTTG	1
NC_045512.2 SARS-Cov-2 25399-25427	TTGTTTATGAGAATCTTCACAA–TTGGAAC	1
NC_045512.2 SARS-Cov-2 16528-16550	GTTGGTAGCGATAATGTTACTGA	1
NC_045512.2 SARS-Cov-2 19820-19844	CAGAGGTGAAAATACTCAATAATTT	1
NC_045512.2 SARS-Cov-2 28847-28865	AACAGTTCAAGAAATTCAA	1
NC_045512.2 SARS-Cov-2 1881-1895	AGGCTGCTCGTGTTG	1
NC_045512.2 SARS-Cov-2 20251-20265	ATTGATTTCTTAGAA	1
NC_045512.2 SARS-Cov-2 23120-23134	GCACCAGCAACTGTT	1
NC_045512.2 SARS-Cov-2 15804-15821	TCAAAACAATGTTTTTAT	1
NC_045512.2 SARS-Cov-2 29718-29731	CCACCACATTTTCA	1
NC_045512.2 SARS-Cov-2 11135-11150	TTTGCAATGATGTTTG	1
NC_045512.2 SARS-Cov-2 15733-15750	TGTTTCAATAGCACTTAT	1
NC_045512.2 SARS-Cov-2 3016-3036	TTCACATATGTATTGTTCTTT	1
NC_045512.2 SARS-Cov-2 19120-19135	TATAAAATAGAAGAAT	1
NC_045512.2 SARS-Cov-2 8471-8490	AATAACTTACCTTTTAAGTT	1
NC_045512.2 SARS-Cov-2 9612-9626	TTACTAATGATGTTT	1
NC_045512.2 SARS-Cov-2 11683-11702	GACTCTTGGTGTTTATGATT	1
NC_045512.2 SARS-Cov-2 29110-29129	AGAACAAACCCAAGGAAATT	1
NC_045512.2 SARS-Cov-2 17264-17278	TTGATAAATTCAAAG	1
NC_045512.2 SARS-Cov-2 19125-19144	AATAGAAGAATTATTCTATT	1
NC_045512.2 SARS-Cov-2 15622-15641	TATGAGTGTCTCTATAGAAA	1
NC_045512.2 SARS-Cov-2 13687-13701	GAAGAAACAATTTAT	1
NC_045512.2 SARS-Cov-2 10054-10071	GAGTGGTTTTAGAAAAAT	1
NC_045512.2 SARS-Cov-2 19933-19948	ACTGACATAGCCAAGA	1
NC_045512.2 SARS-Cov-2 10110-10127	AAGTAACTTGTGGTACAA	1
NC_045512.2 SARS-Cov-2 22145-22180	AAGAATATTGATG-GTTATTTTAAAATATATTCTAAG	1
NC_045512.2 SARS-Cov-2 25945-25964	CAGATTGGTGGTTATACTGA	1
NC_045512.2 SARS-Cov-2 880-897	AGCACGTGCTGGTAAAGC	1
NC_045512.2 SARS-Cov-2 24673-24687	AAAAAGAGTTGATTT	1
NC_045512.2 SARS-Cov-2 3804-3825	AAAATCTCTATGACAAACTTGT	1
NC_045512.2 SARS-Cov-2 584-598	CTTGTCCCTCATGTG	1
NC_045512.2 SARS-Cov-2 13884-13906	ATACAATTGTTGTGATGATGATT	1
NC_045512.2 SARS-Cov-2 4768-4782	TATTGAAACCATCTC	1
NC_045512.2 SARS-Cov-2 16884-16902	TTACAAATTAAATGTTGGT	1
NC_045512.2 SARS-Cov-2 24353-24369	ATTGGCAAAATTCAAGA	1
NC_045512.2 SARS-Cov-2 15143-15167	ATAGACAGTTTCATCAAAAATTATT	1
NC_045512.2 SARS-Cov-2 2299-2316	CTTTAAGCTTGTAAATAA	1
NC_045512.2 SARS-Cov-2 17336-17356	CAGCAGATATAGTTGTCTTTG	1
NC_045512.2 SARS-Cov-2 7828-7852	TGTTAACTTAGACAACCTGAGAGCT	1
NC_045512.2 SARS-Cov-2 1576-1590	TGTTGTTGGAGAAGG	1
NC_045512.2 SARS-Cov-2 26424-26451	TCGTGTTAAAAATCTGAATTCTTCTAGA	1
NC_045512.2 SARS-Cov-2 23389-23407	TGTTCTTTATCAGGATGTT	1
NC_045512.2 SARS-Cov-2 26643-26664	AACAGGAATAGGTTTTTGTATA	1
NC_045512.2 SARS-Cov-2 1128-1148	TTGAAAAGAAAAAGCTTGATG	1
NC_045512.2 SARS-Cov-2 12855-12872	CTAAGAGTGATGGAACTG	1
NC_045512.2 SARS-Cov-2 2110-2128	CATCTTTGGCACTGTTTAT	1
NC_045512.2 SARS-Cov-2 13153-13168	GATGTTGTGTACACAC	1
NC_045512.2 SARS-Cov-2 4867-4881	TGTATATTACACTAG	1
NC_045512.2 SARS-Cov-2 21720-21742	ACTTGTTCTTACCTTTCTTTTCC	1
NC_045512.2 SARS-Cov-2 4090-4104	CATCACTTTCTTAAA	1
NC_045512.2 SARS-Cov-2 26166-26180	AGTAATGGAACCAAT	1
NC_045512.2 SARS-Cov-2 24475-24503	TGCAATTTCAAGTGTTTTAAATGATATCC	1
NC_045512.2 SARS-Cov-2 29529-29542	CCTAAACTCATGCA	1
NC_045512.2 SARS-Cov-2 15411-15442	TGAGTGTGCTCAAGTATTGAGTGAAATGGTCA	1
NC_045512.2 SARS-Cov-2 4352-4374	GAGAAGCAAGAAATTCTTGGAAC	1
NC_045512.2 SARS-Cov-2 7246-7266	GTTTTTGGCATATATTCTTTT	1
NC_045512.2 SARS-Cov-2 14850-14871	ATTTGTAGTTGAAGTTGTTGAT	1
NC_045512.2 SARS-Cov-2 7616-7630	AATTGTGTTAATTGT	1
NC_045512.2 SARS-Cov-2 1018-1032	GCAGACACCTTTTGA	1
NC_045512.2 SARS-Cov-2 28870-28890	AGGCAGCAGTAGGGGAACTTC	1
NC_045512.2 SARS-Cov-2 11563-11580	CCCTATTTTCTTCATAAC	1
NC_045512.2 SARS-Cov-2 19750-19764	GAAAATAAAACAACA	1
NC_045512.2 SARS-Cov-2 26792-26810	GATGTGGCTCAGCTACTTC	1
NC_045512.2 SARS-Cov-2 24475-24499	TGCAATTTCAAGTGTTTTAAATGAT	1
NC_045512.2 SARS-Cov-2 4022-4036	TTGTTACTTTATATT	1
NC_045512.2 SARS-Cov-2 9625-9644	TTCTTTTTTAGCACATATTC	1
NC_045512.2 SARS-Cov-2 5057-5071	TATTTGGATGGAGCT	1

Table 1: Number of hits by segments of SARS-Cov-2 virus genome sequences *(continued)*

SARS-Cov-2	sequence	hits
NC_045512.2 SARS-Cov-2 7133-7150	GTTTGTCTTAGTGGTTTA	1
NC_045512.2 SARS-Cov-2 4783-4805	ACTTGCTGGTTCCTATAAAGATT	1
NC_045512.2 SARS-Cov-2 7008-7022	CTGCTTTAGGTGTTT	1
NC_045512.2 SARS-Cov-2 8268-8285	ATAGTTGTAATAACTATA	1
NC_045512.2 SARS-Cov-2 9937-9954	TAGCTACAGAGAAGCTGC	1
NC_045512.2 SARS-Cov-2 26793-26817	ATGTGGCTCAGCTACTTCATTGCTT	1
NC_045512.2 SARS-Cov-2 2948-2965	ATTGATTTAGATGAGTGG	1
NC_045512.2 SARS-Cov-2 8102-8122	GTTGCAACTGCAGAAGCTGAA	1
NC_045512.2 SARS-Cov-2 3793-3817	TGTCTTTGATAAAAATCTCTATGAC	1
NC_045512.2 SARS-Cov-2 12775-12794	TTACTACAACACAACAAAGG	1
NC_045512.2 SARS-Cov-2 21103-21130	TTTTTCACTTACATTTGTGGGTTTATAC	1
NC_045512.2 SARS-Cov-2 5073-5087	ATGTTACTAAAATAA	1
NC_045512.2 SARS-Cov-2 26424-26450	TCGTGTTAAAAATCTGAATTCTTCTAG	1
NC_045512.2 SARS-Cov-2 9985-10005	CTTCAGTAACTCAGGTTCTGA	1
NC_045512.2 SARS-Cov-2 15204-15218	AATTGGAACAAGCAA	1
NC_045512.2 SARS-Cov-2 24052-24077	TGCTGGCTTCATCAAACAATATGGTG	1
NC_045512.2 SARS-Cov-2 16833-16847	CTTTGAAAAAGGTGA	1
NC_045512.2 SARS-Cov-2 23176-23193	TGTCAATTTCAACTTCAA	1
NC_045512.2 SARS-Cov-2 17004-17023	CAATATCTCAGATGAGTTTT	1
NC_045512.2 SARS-Cov-2 8104-8119	TGCAACTGCAGAAGCT	1
NC_045512.2 SARS-Cov-2 24878-24892	CAAAGGAATTTTTAT	1
NC_045512.2 SARS-Cov-2 17263-17283	TTTGATAAATTCAAAGTGAAT	1
NC_045512.2 SARS-Cov-2 10600-10617	TGGACCTTTTGTTGACAG	1
NC_045512.2 SARS-Cov-2 2676-2690	CTAATATGATGGTAA	1
NC_045512.2 SARS-Cov-2 18557-18593	CACTTAAAAATCTCTCTGACAGAGTCGTATTTGTCTT	1
NC_045512.2 SARS-Cov-2 27694-27713	TTTCTTATTGTTGCGGCAAT	1
NC_045512.2 SARS-Cov-2 7490-7510	TGTATGATGTGTTACAAACGT	1
NC_045512.2 SARS-Cov-2 29112-29133	AACAAACCCAAGGAAATTTTGG	1
NC_045512.2 SARS-Cov-2 8296-8310	TAACAAAGTTGAAAA	1
NC_045512.2 SARS-Cov-2 25961-25981	CTGAAAAATGGGAATCTGGAG	1
NC_045512.2 SARS-Cov-2 7822-7852	TCATTTTGTTAACTT-AGACAACCTGAGAGCT	1
NC_045512.2 SARS-Cov-2 29419-29444	ACCGCAGAGACAGAAGAAACAGCAAA	1
NC_045512.2 SARS-Cov-2 17754-17773	GAGAAAAGCTGTCTTTATTT	1
NC_045512.2 SARS-Cov-2 16927-16941	ACAGTAATGCCATTA	1
NC_045512.2 SARS-Cov-2 27100-27119	TTGCTGCATACAGTCGCTAC	1
NC_045512.2 SARS-Cov-2 11448-11478	ATCAAGCCATTTCCATGTGGGCTCTTATAAT	1
NC_045512.2 SARS-Cov-2 23909-23928	GCACAAGTCAAACAAATTTA	1
NC_045512.2 SARS-Cov-2 24712-24727	GTCCTTCCCTCAGTCA	1
NC_045512.2 SARS-Cov-2 21946-21966	TAAAGTCTGTGAATTTCAATT	1
NC_045512.2 SARS-Cov-2 23428-23443	TGCTATTCATGCAGAT	1
NC_045512.2 SARS-Cov-2 8239-8256	ACATCAATCTGACATAGA	1
NC_045512.2 SARS-Cov-2 29806-29823	ATGTGTAAAATTAATTTT	1
NC_045512.2 SARS-Cov-2 19878-19897	GGACTACAAAAGAGATGCTC	1
NC_045512.2 SARS-Cov-2 1266-1280	GCGATTTTGTTAAAG	1
NC_045512.2 SARS-Cov-2 29855-29874	TTCTTAGGAGAATGACaaaa	1
NC_045512.2 SARS-Cov-2 969-986	AGCATGAAATTGCTTGGT	1
NC_045512.2 SARS-Cov-2 28948-28978	CAGATTGAACCAGCTTGAGAGCAAAATGTCT	1
NC_045512.2 SARS-Cov-2 19003-19023	TTAG-CAGACAAATTCCCAGTT	1
NC_045512.2 SARS-Cov-2 6402-6416	CAGTCTCTGAAGAAG	1
NC_045512.2 SARS-Cov-2 22687-22702	CACTTTTAAGTGTTAT	1
NC_045512.2 SARS-Cov-2 12211-12237	GTCTTTGAATGTGGCTAAATCTGAATT	1
NC_045512.2 SARS-Cov-2 8765-8779	TTTGACACATGGTTT	1
NC_045512.2 SARS-Cov-2 1576-1593	TGTTGTTGGAGAAGGTTC	1
NC_045512.2 SARS-Cov-2 23093-23112	GTAGTACTTTCTTTTGAACT	1
NC_045512.2 SARS-Cov-2 21060-21078	TAAGACTAAAAATG-TTACA	1
NC_045512.2 SARS-Cov-2 9622-9638	TGTTTCTTTTTTAGCAC	1
NC_045512.2 SARS-Cov-2 20724-20740	AGAAAAGTGTGACCTTC	1
NC_045512.2 SARS-Cov-2 29324-29341	ATTTTGCTGAATAAGCAT	1
NC_045512.2 SARS-Cov-2 962-989	GAACATGAGCATGAAAT–TGCTTGGTACA	1
NC_045512.2 SARS-Cov-2 15871-15893	GAATTTTGCTCTCAACATACAAT	1
NC_045512.2 SARS-Cov-2 21865-21879	AAGAGGCTGGATTTT	1
NC_045512.2 SARS-Cov-2 1760-1775	TTCAAACAAATTGTTG	1
NC_045512.2 SARS-Cov-2 20002-20019	GATGGTCAAGTAGACTTA	1
NC_045512.2 SARS-Cov-2 19338-19358	AAGTGCTTTTGTTAATTTAAA	1
NC_045512.2 SARS-Cov-2 22002-22020	AAAACAACAAAAGTTGGAT	1
NC_045512.2 SARS-Cov-2 8776-8796	GTTTAGCCAGCGTGGTGGTAG	1
NC_045512.2 SARS-Cov-2 3668-3682	TATGAAAATTTTAAT	1
NC_045512.2 SARS-Cov-2 17853-17868	AGAATATGACTATGTC	1
NC_045512.2 SARS-Cov-2 20049-20081	TACAGAAGGTAGTGTTAAAGGTTTACAACCATC	1
NC_045512.2 SARS-Cov-2 23160-23174	TGGTTAAAAACAAAT	1
NC_045512.2 SARS-Cov-2 22744-22758	TGTCTATGCAGATTC	1
NC_045512.2 SARS-Cov-2 13054-13071	TTCAACTGTATTATCTTT	1
NC_045512.2 SARS-Cov-2 27943-27961	ACCAAGAATGTAGTTTACA	1
NC_045512.2 SARS-Cov-2 26662-26680	ATATAATTAAGTTAATTTT	1
NC_045512.2 SARS-Cov-2 25441-25461	CAAGG-TGAAATCAAGGATGCT	1
NC_045512.2 SARS-Cov-2 1337-1360	GGTTA-CTTACCCCAAAATGCTGTT	1
NC_045512.2 SARS-Cov-2 17256-17270	AGAGTGTTTTGATAA	1
NC_045512.2 SARS-Cov-2 18664-18700	CTATGTGATAGACGTGCCACATGCTTTTCCACTGCTT	1
NC_045512.2 SARS-Cov-2 2371-2385	CTTGAATTTAGGTGA	1
NC_045512.2 SARS-Cov-2 2496-2510	GAGAAACACTTCCCA	1
NC_045512.2 SARS-Cov-2 22262-22296	AACATCACTAGGTTTCAAACTTT–ACTTGCTTTACA	1
NC_045512.2 SARS-Cov-2 19941-19960	AGCCAAGAAACCAACTGAAA	1
NC_045512.2 SARS-Cov-2 1800-1819	CAAAAGGAAAAGCTAAAAAA	1
NC_045512.2 SARS-Cov-2 12857-12871	AAGAGTGATGGAACT	1
NC_045512.2 SARS-Cov-2 17662-17676	TATAAGGGTGTTATC	1
NC_045512.2 SARS-Cov-2 23000-23014	TGTAATGGTGTTGAA	1
NC_045512.2 SARS-Cov-2 9396-9411	CAGCATCTATAGTAGC	1
NC_045512.2 SARS-Cov-2 22057-22072	TTGCACTTTTGAATAT	1
NC_045512.2 SARS-Cov-2 1807-1821	AAAAGCTAAAAAAGG	1

Table 1: Number of hits by segments of SARS-Cov-2 virus genome sequences *(continued)*

SARS-Cov-2	sequence	hits
NC_045512.2 SARS-Cov-2 23717-23740	ACTATTAGTGTTACCACAGAAATT	1
NC_045512.2 SARS-Cov-2 8372-8392	GTAGCAAAAAGTCACAACATT	1
NC_045512.2 SARS-Cov-2 2570-2587	CCTACTAGTGAAGCTGTT	1
NC_045512.2 SARS-Cov-2 17963-17982	TGTCTGATAGAGACC–TTTAT	1
NC_045512.2 SARS-Cov-2 3193-3212	AGAAGATTGGTTAGATGATG	1
NC_045512.2 SARS-Cov-2 14851-14871	TTTGTAGTTGAAGTTGTTGAT	1
NC_045512.2 SARS-Cov-2 6610-6649	AGTATTAGGT-TTGAAAACCCTTGCTACTCATG-GTTTAGCT	1
NC_045512.2 SARS-Cov-2 2807-2827	AGGATTGATAAAGTACTTAAT	1
NC_045512.2 SARS-Cov-2 13094-13113	GCTAAAGCTTACAAAGATTA	1
NC_045512.2 SARS-Cov-2 27667-27681	GAAGTTCAAGAACTT	1
NC_045512.2 SARS-Cov-2 26422-26441	TCTCGTGTTAAAAATCTGAA	1
NC_045512.2 SARS-Cov-2 3716-3742	GCTGGTATTTTTGGTGCTGACCCTATA	1
NC_045512.2 SARS-Cov-2 24205-24231	AATCACTTCTGGTTGGACCTTTGGTGC	1
NC_045512.2 SARS-Cov-2 14855-14870	TAGTTGAAGTTGTTGA	1
NC_045512.2 SARS-Cov-2 12571-12587	AGATGCAGATAGTAAAA	1
NC_045512.2 SARS-Cov-2 4321-4337	CTTTTACATTCTACCAT	1
NC_045512.2 SARS-Cov-2 4527-4541	GATTTTACTTTTACA	1
NC_045512.2 SARS-Cov-2 16855-16885	GATGCTGTTGTTTACCGAGGTACAACAACTT	1
NC_045512.2 SARS-Cov-2 15695-15712	ATTTCTCAATGATGATAC	1
NC_045512.2 SARS-Cov-2 26094-26109	TAAAATTGTTGATGAG	1
NC_045512.2 SARS-Cov-2 12333-12349	CAAAAGTTACTAGTGCT	1
NC_045512.2 SARS-Cov-2 13929-13950	TGATTTTGTAGAAAACCCAGAT	1
NC_045512.2 SARS-Cov-2 14680-14705	AATTTTAACAAAGACTTCTATGACTT	1
NC_045512.2 SARS-Cov-2 5632-5646	TGGTAAACAAGCTAC	1
NC_045512.2 SARS-Cov-2 24700-24727	CTATCATCTTATGTCCTTCCCTCAGTCA	1
NC_045512.2 SARS-Cov-2 2051-2068	GTTGTAATGGCCTACATT	1
NC_045512.2 SARS-Cov-2 9782-9797	AGTACTTTTGAAGAAG	1
NC_045512.2 SARS-Cov-2 13805-13819	ACACAATGGCAGACC	1
NC_045512.2 SARS-Cov-2 14917-14932	GTCATCGTCAACAACC	1
NC_045512.2 SARS-Cov-2 1702-1716	TTTTTCTGCTTCCAC	1
NC_045512.2 SARS-Cov-2 6396-6410	TAAAACCAGTCTCTG	1
NC_045512.2 SARS-Cov-2 3204-3224	TAGATGATGATAGTCAACAAA	1
NC_045512.2 SARS-Cov-2 4333-4359	ACCATCTATTATCTCTAATGAG-AAGCA	1
NC_045512.2 SARS-Cov-2 6691-6705	TAAGCCTTTTCTTAA	1
NC_045512.2 SARS-Cov-2 7271-7290	AGGTTTTTCTATGTACTTGG	1
NC_045512.2 SARS-Cov-2 10450-10464	CAATTTCACTATTAA	1
NC_045512.2 SARS-Cov-2 22987-23006	CGGTAGCACACCTTGTAATG	1
NC_045512.2 SARS-Cov-2 1673-1692	AATGAAGAGATCGCCATTAT	1
NC_045512.2 SARS-Cov-2 23965-23979	TTTTTCACAAATATT	1
NC_045512.2 SARS-Cov-2 17362-17376	ATTTCAATGGCCACA	1
NC_045512.2 SARS-Cov-2 9412-9437	TGGTGGTATTGTAGCTATCGTAGTAA	1
NC_045512.2 SARS-Cov-2 1116-1133	TTCAACCAAGGGTTGAAA	1
NC_045512.2 SARS-Cov-2 7192-7219	TACCATTTCATCTTTTAAATGGGATTTA	1
NC_045512.2 SARS-Cov-2 12170-12207	GCTAATGGTGATTCTGAAGTTGTTCTTAAAAAGTTGAA	1
NC_045512.2 SARS-Cov-2 6333-6348	ATTCGTTTGATGTACT	1
NC_045512.2 SARS-Cov-2 23799-23816	CAACTGAATGCAGCAATC	1
NC_045512.2 SARS-Cov-2 2884-2903	TGTTGTGGCAGATGCTGTCA	1
NC_045512.2 SARS-Cov-2 29722-29735	CACATTTTCACCGA	1
NC_045512.2 SARS-Cov-2 2345-2360	ATTATTGGTGGAGCTA	1
NC_045512.2 SARS-Cov-2 17349-17370	TGTCTTTGATGAAATTTCAATG	1
NC_045512.2 SARS-Cov-2 20629-20653	CATGTAGAAACATTTTACCCAAAAT	1
NC_045512.2 SARS-Cov-2 17385-17400	TTTGAGTGTTGTCAAT	1
NC_045512.2 SARS-Cov-2 3668-3683	TATGAAAATTTTAATC	1
NC_045512.2 SARS-Cov-2 29550-29563	CAAGGCAGATGGGC	1
NC_045512.2 SARS-Cov-2 5962-5984	TTATAAGAAAGACAATTCTTATT	1
NC_045512.2 SARS-Cov-2 7919-7933	TCATCTGCAAAATCA	1
NC_045512.2 SARS-Cov-2 21951-22005	TCTGTGAATTTCAATTTTGTAATGATCCATTTTTGGGTGTTTATTACCACAAAAA	1
NC_045512.2 SARS-Cov-2 21999-22013	ACAAAAACAACAAAA	1
NC_045512.2 SARS-Cov-2 20947-20969	GATTCAGATCTTAATGACTTTGT	1
NC_045512.2 SARS-Cov-2 10027-10050	AACCTCT—ATCACCTCAGCTGTTTT	1
NC_045512.2 SARS-Cov-2 575-592	CTTGGTGTCCTTGTCCCT	1
NC_045512.2 SARS-Cov-2 20876-20905	GTTCTGATAAAGGAGTTGCACCAGGTACAG	1
NC_045512.2 SARS-Cov-2 23166-23194	AAAACAAATGTGT-CAATTTCAACTTCAAT	1
NC_045512.2 SARS-Cov-2 21188-21203	ATGCTGATCTTTATAA	1
NC_045512.2 SARS-Cov-2 3188-3202	CAAGAAGAAGATTGG	1
NC_045512.2 SARS-Cov-2 22282-22299	TTTACTTGCTTTACATAG	1
NC_045512.2 SARS-Cov-2 9784-9798	TACTTTTGAAGAAGC	1
NC_045512.2 SARS-Cov-2 4192-4211	TACTGAAATGCTAGCGAAAG	1
NC_045512.2 SARS-Cov-2 20876-20898	GTTCTGATAAAGGAGTTGCACCA	1
NC_045512.2 SARS-Cov-2 24789-24803	CAACTGCTCCTGCCA	1
NC_045512.2 SARS-Cov-2 16312-16326	TGTTGTAAATGCTGT	1
NC_045512.2 SARS-Cov-2 3393-3417	CAGACATTGTGGAAGAAGCTAAAAA	1
NC_045512.2 SARS-Cov-2 10137-10160	ACGGTCTTTGGCTTGATGACGTAG	1
NC_045512.2 SARS-Cov-2 29704-29717	AGGACTTGAAAGAG	1
NC_045512.2 SARS-Cov-2 28224-28242	TATCATGACGTTCGTGTTG	1
NC_045512.2 SARS-Cov-2 4782-4802	CACTTGCTGGTTCCTATAAAG	1
NC_045512.2 SARS-Cov-2 23142-23160	CTAA-AAAGTCTACTAATTT	1
NC_045512.2 SARS-Cov-2 29432-29446	AAGAAACAGCAAACT	1
NC_045512.2 SARS-Cov-2 6311-6325	ACAAAACCAGTTGAA	1
NC_045512.2 SARS-Cov-2 11987-12006	TTTGAAAAAATGGTTTCACT	1
NC_045512.2 SARS-Cov-2 24487-24501	TGTTTTAAATGATAT	1
NC_045512.2 SARS-Cov-2 2220-2234	TCTCAACCTGTGCTT	1
NC_045512.2 SARS-Cov-2 4734-4751	TTACTTCTTCTTCTAAAA	1
NC_045512.2 SARS-Cov-2 13207-13221	CAATATGGATCAAGA	1
NC_045512.2 SARS-Cov-2 13540-13557	GCTTTTGACATCTACAAT	1
NC_045512.2 SARS-Cov-2 13085-13109	GTAGATGCTGCTAAAGCTTACAAAG	1
NC_045512.2 SARS-Cov-2 7247-7264	TTTTTGGCATATATTCTT	1
NC_045512.2 SARS-Cov-2 17379-17416	TTATGATTTGAGTGTTGTCAATGCCAGATTACGTGCTA	1
NC_045512.2 SARS-Cov-2 7537-7554	AACTATTGTTAATGGTGT	1

Table 1: Number of hits by segments of SARS-Cov-2 virus genome sequences *(continued)*

SARS-Cov-2	sequence	hits
NC_045512.2 SARS-Cov-2 1352-1369	AATGCTGTTGTTAAAATT	1
NC_045512.2 SARS-Cov-2 6871-6922	TGTTAAGAGTGTCGGTA———— AATTTTGTCTAGAGGCTTCATTTAATTATTTGAAG	1
NC_045512.2 SARS-Cov-2 7590-7607	AAGGCTTTTGCAAACTAC	1
NC_045512.2 SARS-Cov-2 1785-1804	GTAATTTTAAAGTTACAAAA	1
NC_045512.2 SARS-Cov-2 29812-29824	AAAATTAATTTTA	1
NC_045512.2 SARS-Cov-2 19697-19716	TCATTAATAACACTGTTTAC	1
NC_045512.2 SARS-Cov-2 14843-14874	AACTACTATTTGTAGTTGAAGTTGTTGATAAG	1
NC_045512.2 SARS-Cov-2 20975-20989	ATGCAGATTCAACTT	1
NC_045512.2 SARS-Cov-2 14075-14090	TCAATGGTAACTGGTA	1
NC_045512.2 SARS-Cov-2 22491-22510	AAGGAATCTATCAAACTTCT	1
NC_045512.2 SARS-Cov-2 4360-4374	AGAAATTCTTGGAAC	1
NC_045512.2 SARS-Cov-2 1123-1147	AAGGGTTGAAAAGAAAAAGCTTGAT	1
NC_045512.2 SARS-Cov-2 25744-25765	ATAAACTTTGTAAGAATAATAA	1
NC_045512.2 SARS-Cov-2 14049-14066	TGTACTGACATTAGATAA	1
NC_045512.2 SARS-Cov-2 23711-23732	AATTTTACTATTAGTGTTACCA	1
NC_045512.2 SARS-Cov-2 27750-27778	GACAGAATGATTGAACTTTCATTAATTGA	1
NC_045512.2 SARS-Cov-2 15139-15154	ACCAATAGACAGTTTC	1
NC_045512.2 SARS-Cov-2 22314-22334	CTGGTGATTCTTCTTCAGGTT	1
NC_045512.2 SARS-Cov-2 19701-19716	TAATAACACTGTTTAC	1
NC_045512.2 SARS-Cov-2 6110-6129	AAACCTGCTTCAAGAGAGCT	1
NC_045512.2 SARS-Cov-2 20255-20270	ATTTCTTAGAATTAGC	1
NC_045512.2 SARS-Cov-2 21404-21423	AATTTCCCCTTAAATTAAGG	1
NC_045512.2 SARS-Cov-2 7338-7352	TTATTAGTAATTCTT	1
NC_045512.2 SARS-Cov-2 10409-10431	AATGGTTCACCATCTGGTGTTTA	1
NC_045512.2 SARS-Cov-2 27898-27913	AATTTCTTGTTTTCTT	1
NC_045512.2 SARS-Cov-2 29468-29481	GATTTGGATGATTT	1
NC_045512.2 SARS-Cov-2 27309-27326	AATTAAAAATTTATCTAA	1
NC_045512.2 SARS-Cov-2 28850-28867	AGTTCAAGAAATTCAACT	1
NC_045512.2 SARS-Cov-2 3076-3090	AGAAGAAGAGTTTGA	1
NC_045512.2 SARS-Cov-2 12707-12725	GCACTACGACAGATGTCTT	1
NC_045512.2 SARS-Cov-2 15972-15987	AGATGATATCGTAAAA	1
NC_045512.2 SARS-Cov-2 22802-22819	CAAACTGGAAAGATTGCT	1
NC_045512.2 SARS-Cov-2 11129-11146	TCTGCTTTTGCAATGATG	1
NC_045512.2 SARS-Cov-2 17086-17100	CCTGGTACTGGTAAG	1
NC_045512.2 SARS-Cov-2 10737-10756	ATGACTTTAACCTTGTGGCT	1
NC_045512.2 SARS-Cov-2 5815-5829	TGCTTTACTTACAAA	1
NC_045512.2 SARS-Cov-2 3851-3865	GAAAAGCAAGTTGAA	1
NC_045512.2 SARS-Cov-2 21464-21487	ATATGATTTTATCTCTTCTTAGTA	1
NC_045512.2 SARS-Cov-2 3029-3049	TGTTCTTTCTACCCTCCAGAT	1
NC_045512.2 SARS-Cov-2 13681-13701	CAACATGAAGAAACAATTTAT	1
NC_045512.2 SARS-Cov-2 3804-3818	AAAATCTCTATGACA	1
NC_045512.2 SARS-Cov-2 15644-15663	GAGATGTTGACACAGACTTT	1
NC_045512.2 SARS-Cov-2 16963-16980	CAAGAGCACTATGTTAGA	1
NC_045512.2 SARS-Cov-2 4754-4768	CCTGAAGAACATTTT	1
NC_045512.2 SARS-Cov-2 4782-4796	CACTTGCTGGTTCCT	1
NC_045512.2 SARS-Cov-2 2809-2833	GATTGATAAAGTACTTAATGAGAAG	1
NC_045512.2 SARS-Cov-2 5555-5570	GGTGTAGAAGCTGTTA	1
NC_045512.2 SARS-Cov-2 16603-16641	GCTAACACCTGTACTGAAAGACTCAAGCTTTTTGCAGCA	1
NC_045512.2 SARS-Cov-2 26086-26104	ATCTACAATAAAATTGTTG	1
NC_045512.2 SARS-Cov-2 22890-22909	CTAAGGTTGGTGGTAATTAT	1
NC_045512.2 SARS-Cov-2 4740-4754	CTTCTTCTAAAACAC	1
NC_045512.2 SARS-Cov-2 11174-11188	TGTTTGTTTTTGTTA	1
NC_045512.2 SARS-Cov-2 17436-17450	CGACCCTGCTCAATT	1

Table 2: Number of hits by Streptococcus pneumoniae sequences

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11985-11999	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5972-5986	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2017-2034	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22895-22909	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 18220-18234	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29846-29859	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13631-13650	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3404-3418	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1693-1712	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29846-29858	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7309-7327	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29856-29867	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29810-29822	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4736-4753	2
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10600-10617	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17853-17868	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2808-2827	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22158-22180	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20049-20081	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19878-19897	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 18628-18645	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9350-9379	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2574-2588	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4867-4881	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15695-15712	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9782-9797	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1440-1455	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3668-3682	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 881-908	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16884-16902	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 513-531	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16603-16641	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7616-7630	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29532-29548	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27100-27119	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1277-1296	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27261-27275	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21073-21087	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14049-14066	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5915-5931	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1266-1280	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11848-11862	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3851-3865	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22057-22072	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1702-1716	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24475-24499	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24700-24727	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13085-13109	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2570-2587	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27750-27778	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19125-19144	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4754-4768	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1123-1147	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19003-19023	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9622-9638	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11129-11146	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12004-12023	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21060-21078	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28517-28531	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7490-7510	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4749-4763	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7828-7852	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1352-1369	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8822-8841	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29432-29446	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23986-24004	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27336-27353	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8372-8392	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22802-22819	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15804-15821	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12775-12794	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7569-7583	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24475-24503	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 727-741	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29468-29481	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15905-15922	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 18128-18148	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 18557-18593	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6311-6325	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20255-20270	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23909-23928	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3176-3196	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6615-6635	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6610-6649	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17820-17839	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15157-15176	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2371-2385	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23996-24010	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12211-12237	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6951-6966	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17008-17023	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11988-12019	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13884-13906	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23142-23160	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3193-3212	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13202-13220	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15733-15750	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15139-15154	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2567-2591	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22803-22817	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24789-24803	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4921-4935	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22282-22299	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23166-23189	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16454-16477	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29285-29299	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20251-20266	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11762-11782	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14917-14932	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3677-3692	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23166-23194	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22957-22979	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11174-11188	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15148-15162	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3093-3115	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23176-23193	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10450-10464	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27694-27713	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26114-26131	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16963-16980	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7008-7022	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5815-5829	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21437-21452	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1131-1147	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4352-4374	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17004-17023	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21725-21744	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3804-3818	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20151-20168	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1785-1804	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11987-12006	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22934-22962	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23986-24000	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5632-5646	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11035-11054	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21720-21742	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17264-17278	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8297-8311	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19120-19135	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7192-7219	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13924-13947	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4042-4064	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3918-3938	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12054-12073	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12857-12871	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3942-3965	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23069-23083	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12993-13012	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24673-24687	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5555-5570	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10137-10160	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14075-14090	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17385-17400	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11478-11495	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12571-12587	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12333-12349	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4321-4337	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 18664-18700	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2804-2839	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 730-744	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17436-17450	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24142-24156	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26094-26109	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8296-8310	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14330-14349	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27023-27038	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9985-10005	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24562-24583	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28885-28903	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3668-3683	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17963-17982	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4360-4374	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6691-6705	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17828-17849	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24627-24647	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3029-3049	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10067-10081	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20145-20159	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23093-23112	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7897-7923	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29859-29873	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2790-2817	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13888-13902	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4192-4211	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29802-29814	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1123-1137	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2299-2316	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12192-12211	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29463-29481	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2220-2234	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13681-13701	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23799-23816	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27753-27778	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10603-10617	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16855-16885	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22002-22020	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 962-989	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29805-29817	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1576-1590	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25443-25458	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29844-29864	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1116-1133	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10110-10127	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4782-4802	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19713-19738	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6707-6725	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28870-28890	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6402-6416	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22073-22090	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24619-24639	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3477-3497	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1800-1819	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14857-14872	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12933-12954	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3945-3964	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16833-16847	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19941-19960	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2297-2315	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10027-10050	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7511-7533	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4768-4782	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1024-1041	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9702-9721	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29855-29874	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4734-4751	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6414-6428	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17379-17416	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25945-25964	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20002-20019	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12230-12246	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21317-21339	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14859-14874	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23965-23979	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21999-22013	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 693-713	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24943-24963	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22118-22137	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23519-23534	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13687-13701	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27257-27274	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8731-8750	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23896-23910	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13701-13720	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14850-14871	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28850-28867	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17086-17101	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1337-1360	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22314-22334	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14680-14705	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15644-15663	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8697-8714	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2948-2965	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22744-22758	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28811-28825	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8471-8490	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9784-9801	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28088-28102	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17349-17370	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28-47	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6781-6800	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26422-26441	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20724-20740	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4527-4541	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11448-11478	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21946-21966	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15117-15131	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13540-13557	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26793-26817	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15608-15648	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7246-7266	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8561-8583	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15912-15937	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 313-327	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9612-9626	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9811-9830	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20629-20653	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12195-12214	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28847-28865	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26662-26680	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29816-29839	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8776-8796	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22890-22909	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23711-23732	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29550-29563	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14855-14870	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14851-14871	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21546-21564	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3076-3090	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4218-4232	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3168-3185	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29324-29341	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15622-15641	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8765-8779	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2051-2068	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26424-26450	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1623-1643	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6110-6129	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1576-1593	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1760-1775	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 18999-19023	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2809-2833	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23160-23174	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27577-27609	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4022-4036	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29722-29735	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23428-23443	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4090-4104	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12060-12074	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12707-12725	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16528-16551	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19701-19716	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28224-28242	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8104-8119	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17362-17376	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15204-15218	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25961-25981	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19119-19136	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16971-16985	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13938-13959	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7822-7848	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22823-22837	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21188-21203	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4916-4930	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2800-2819	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29529-29542	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20876-20905	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29704-29717	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21947-22005	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5859-5874	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14451-14465	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 18824-18838	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11683-11702	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12855-12872	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10737-10756	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16528-16550	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13607-13627	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15898-15915	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7271-7290	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3188-3202	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7919-7933	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19986-20009	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3422-3446	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26096-26115	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28969-28983	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17336-17356	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26792-26810	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3875-3895	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20436-20454	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5824-5838	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29110-29129	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22262-22296	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1788-1817	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 18453-18467	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6871-6922	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2884-2903	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16537-16555	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20407-20427	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19933-19948	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5962-5984	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19697-19716	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23951-23970	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23389-23407	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14587-14612	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3940-3959	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26201-26216	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24353-24369	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1673-1692	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16927-16941	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17754-17773	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9829-9848	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12494-12513	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17126-17145	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21223-21238	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6396-6410	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17263-17283	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12170-12207	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12267-12287	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24712-24727	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26815-26839	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11418-11433	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24487-24501	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4204-4230	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11981-11995	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8217-8239	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7337-7358	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16500-16518	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28948-28978	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13207-13221	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15871-15893	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17436-17451	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4740-4754	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27667-27681	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22491-22510	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23120-23134	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9937-9954	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1605-1627	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23000-23014	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 880-897	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10409-10431	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17258-17275	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21404-21423	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24052-24077	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16312-16326	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1258-1277	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26166-26180	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27577-27599	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8187-8201	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19820-19844	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26086-26104	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13805-13819	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10054-10071	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26643-26664	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22145-22180	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21865-21879	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12269-12289	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11141-11156	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 533-555	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11563-11580	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16055-16072	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3393-3417	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1530-1549	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6515-6532	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22392-22409	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20975-20989	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3118-3140	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7652-7670	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15411-15442	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14843-14874	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 18627-18642	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13929-13950	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16626-16640	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 443-457	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27309-27326	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12615-12634	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7590-7607	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26291-26315	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14981-15013	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8160-8193	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20867-20881	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8239-8256	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27943-27961	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1632-1651	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2676-2690	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22987-23006	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5998-6017	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9412-9437	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2496-2510	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28953-28978	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 969-986	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13564-13578	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14769-14787	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7915-7929	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5104-5119	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1018-1032	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2807-2827	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23618-23648	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24878-24892	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29855-29866	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25078-25095	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8237-8251	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25007-25032	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 575-592	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8102-8122	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3181-3213	1
> NZ_CP020550.1 Streptococcus pneumoniae strain Hu17 plasmid pSpn_Hu17 Length=6012 Query = NC_045512.2 SARS-Cov-2 1128-1148	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29718-29731	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29419-29444	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13153-13168	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7247-7264	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15972-15987	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12814-12842	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17748-17763	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22687-22702	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7822-7852	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29786-29799	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7338-7352	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2121-2140	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7133-7150	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 6333-6348	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9784-9798	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12881-12895	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7791-7811	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5073-5087	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23717-23740	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19759-19774	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17086-17100	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17042-17064	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29112-29133	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29812-29824	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25089-25108	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7290-7304	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2913-2930	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19338-19358	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 584-598	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5862-5881	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1618-1647	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11838-11861	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25762-25789	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1578-1593	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8731-8752	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 10651-10665	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26424-26451	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24278-24292	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19906-19924	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29378-29397	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3204-3224	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9781-9800	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27900-27914	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9625-9644	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25399-25427	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25921-25953	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27336-27350	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4782-4796	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20876-20898	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8268-8285	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9396-9411	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1881-1895	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7537-7554	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1807-1821	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19354-19368	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20358-20375	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8750-8764	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15143-15167	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29698-29717	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 8055-8069	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20566-20585	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 9321-9335	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3016-3036	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25441-25461	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17662-17676	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12835-12850	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2345-2360	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 27898-27913	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 16501-16518	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29775-29791	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20251-20265	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3258-3282	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21103-21130	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1620-1635	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21818-21837	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3793-3817	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13054-13071	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 12398-12417	1

Table 2: Number of hits by Streptococcus pneumoniae sequences *(continued)*

Streptococcus pneumoniae	hits
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 15154-15174	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29306-29325	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 24205-24231	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 7063-7077	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2236-2250	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5057-5071	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17680-17694	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5592-5610	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 26551-26568	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 23323-23337	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21951-22005	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 20947-20969	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29806-29823	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 5279-5299	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 22393-22412	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21670-21685	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19743-19762	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 11135-11150	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3804-3825	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19561-19575	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 28018-28032	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 14830-14844	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4333-4359	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 1698-1712	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 19750-19764	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 2110-2128	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 4783-4805	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 29821-29836	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 21464-21487	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 3716-3742	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 17256-17270	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 13094-13113	1
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome Length=2148350 Query = NC_045512.2 SARS-Cov-2 25744-25765	1

3.1 Hits/Alignments

3.1.1 NC_045512.2 SARS-Cov-2 1693-1712:

TTTGGCATCTTTTTCTGCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1693-1712
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
```

```
Query  943     TTTGGCATCTTTTTCTGCTT  962
               |||| |||||||||||| |||
Sbjct  241762  TTTGCCATCTTTTTCTCCTT  241743


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1693-1712
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  943      TTTGGCATCTTTTTCTGCTT  962
                |||| |||||||||||| |||
Sbjct  1488055  TTTGTCATCTTTTTCTCCTT  1488074
```

3.1.2 NC_045512.2 SARS-Cov-2 22895-22909:

GTTGGTGGTAATTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22895-22909
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  145    GTTGGTGGTAATTAT  159
              |||||||||||||||
Sbjct  72168  GTTGGTGGTAATTAT  72182


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22895-22909
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  145     GTTGGTGGTAATTAT  159
               |||||||||||||||
Sbjct  543959  GTTGGTGGTAATTAT  543973


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22890-22909
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Plus
Query  140     CTAAGGTTGGTGGTAATTAT  159
               |||||||||||| || |||
Sbjct  830301  CTAAGGTTGGTGGAAACTAT  830320
```

3.1.3 NC_045512.2 SARS-Cov-2 4736-4753:

ACTTCTTCTTCTAAAACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4736-4753
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  936     ACTTCTTCTTCTAAAACA  953
               |||||| ||||||||||
Sbjct  649359  ACTTCTACTTCTAAAACA  649376


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4736-4753
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  936     ACTTCTTCTTCTAAAACA  953
               |||||| ||||||||||
Sbjct  893275  ACTTCTGCTTCTAAAACA  893258
```

3.1.4 NC_045512.2 SARS-Cov-2 29846-29858:

TTTAATAGCTTCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29846-29858
Score = 24.7 bits (26),  Expect = 6.3
 Identities = 13/13 (100%), Gaps = 0/13 (0%)
 Strand=Plus/Plus
Query  46       TTTAATAGCTTCT  58
               |||||||||||||
Sbjct  1202237  TTTAATAGCTTCT  1202249


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
```

```
Query = NC_045512.2 SARS-Cov-2  29846-29858
Score = 24.7 bits (26),  Expect = 6.3
 Identities = 13/13 (100%), Gaps = 0/13 (0%)
 Strand=Plus/Plus
Query  46       TTTAATAGCTTCT  58
                ||||||||||||
Sbjct  1568441  TTTAATAGCTTCT  1568453
```

3.1.5 NC_045512.2 SARS-Cov-2 3404-3418:

GAAGAAGCTAAAAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3404-3418
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  654     GAAGAAGCTAAAAAG  668
                |||||||||||||||
Sbjct  159299  GAAGAAGCTAAAAAG  159313


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3404-3418
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  654      GAAGAAGCTAAAAAG  668
                |||||||||||||||
Sbjct  1909636  GAAGAAGCTAAAAAG  1909650
```

3.1.6 NC_045512.2 SARS-Cov-2 13631-13650:

ATTTAATTGATTCTTACTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13631-13650
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  881     ATTTAATTGATTCTTACTTT  900
                |||||||||||||| | |||
Sbjct  426490  ATTTAATTGATTCTAATTTT  426471
```

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13631-13650
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  881      ATTTAATTGATTCTTACTTT  900
                |||  ||||  ||||||||||
Sbjct  1554249  ATTAAATTTATTCTTACTTT  1554230
```

3.1.7 NC_045512.2 SARS-Cov-2 11985-11999:

CCTTTGAAAAAATGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11985-11999
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  235     CCTTTGAAAAAATGG  249
                |||||||||||||||
Sbjct  466315  CCTTTGAAAAAATGG  466301


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11985-11999
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  235      CCTTTGAAAAAATGG  249
                 |||||||||||||||
Sbjct  1969663  CCTTTGAAAAAATGG  1969677
```

3.1.8 NC_045512.2 SARS-Cov-2 29846-29859:

TTTAATAGCTTCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29846-29859
Score = 26.5 bits (28),  Expect = 2.9
 Identities = 14/14 (100%), Gaps = 0/14 (0%)
 Strand=Plus/Plus
Query  96       TTTAATAGCTTCTT  109
```

```
                |||||||||||||||
Sbjct  1105911  TTTAATAGCTTCTT  1105924


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29846-29859
Score = 26.5 bits (28),  Expect = 2.9
 Identities = 14/14 (100%), Gaps = 0/14 (0%)
 Strand=Plus/Plus
Query  96       TTTAATAGCTTCTT  109
                |||||||||||||||
Sbjct  1904579  TTTAATAGCTTCTT  1904592
```

3.1.9 NC_045512.2 SARS-Cov-2 18220-18234:

AAAATGAATTATCAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18220-18234
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  470     AAAATGAATTATCAA  484
                |||||||||||||||
Sbjct  147277  AAAATGAATTATCAA  147291


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18220-18234
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  470      AAAATGAATTATCAA  484
                |||||||||||||||
Sbjct  1114691  AAAATGAATTATCAA  1114705
```

3.1.10 NC_045512.2 SARS-Cov-2 29810-29822:

GTAAAATTAATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29810-29822
Score = 24.7 bits (26),  Expect = 6.3
```

```
 Identities = 13/13 (100%), Gaps = 0/13 (0%)
 Strand=Plus/Plus
Query  10      GTAAAATTAATTT  22
               |||||||||||||
Sbjct  274329  GTAAAATTAATTT  274341


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29810-29822
Score = 24.7 bits (26),  Expect = 6.3
 Identities = 13/13 (100%), Gaps = 0/13 (0%)
 Strand=Plus/Plus
Query  10      GTAAAATTAATTT  22
               |||||||||||||
Sbjct  799517  GTAAAATTAATTT  799529
```

3.1.11 NC_045512.2 SARS-Cov-2 5972-5986:

GACAATTCTTATTTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5972-5986
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  222      GACAATTCTTATTTC  236
               |||||||||||||||
Sbjct  1019853  GACAATTCTTATTTC  1019839


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5972-5986
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  222      GACAATTCTTATTTC  236
               |||||||||||||||
Sbjct  1793645  GACAATTCTTATTTC  1793659
```

3.1.12 NC_045512.2 SARS-Cov-2 2017-2034:

GATGTTCACATCTGATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
```

```
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2017-2034
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  267     GATGTTCACATCTGATTT  284
               ||||||||||||| ||||
Sbjct  263490  GATGTTCACATCTTATTT  263507


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2017-2034
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  267     GATGTTCACATCTGATTT  284
               ||||||||||||| ||||
Sbjct  509597  GATGTTCACATCTTATTT  509580
```

3.1.13 NC_045512.2 SARS-Cov-2 7309-7327:

ATTGTTTTTCAGCTATTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7309-7327
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  559     ATTGTTTTTCAGCTATTTT  577
               ||| ||||||||||||||||
Sbjct  929764  ATTCTTTTTCAGCTATTTT  929746


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7309-7327
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  559     ATTGTTTTTCAGCTATTTT  577
               ||| ||||||||||||||||
Sbjct  930028  ATTCTTTTTCAGCTATTTT  930010
```

3.1.14 NC_045512.2 SARS-Cov-2 29856-29867:

TCTTAGGAGAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29856-29867
Score = 22.9 bits (24),  Expect = 8.9
 Identities = 12/12 (100%), Gaps = 0/12 (0%)
 Strand=Plus/Plus
Query  6       TCTTAGGAGAAT  17
               ||||||||||||
Sbjct  647621  TCTTAGGAGAAT  647632


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29856-29867
Score = 22.9 bits (24),  Expect = 8.9
 Identities = 12/12 (100%), Gaps = 0/12 (0%)
 Strand=Plus/Plus
Query  6       TCTTAGGAGAAT  17
               ||||||||||||
Sbjct  959482  TCTTAGGAGAAT  959493
```

3.1.15 NC_045512.2 SARS-Cov-2 1440-1455:

GCTTGAAAACCATTCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1440-1455
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  690      GCTTGAAAACCATTCT  705
                ||||||||||||||||
Sbjct  1967366  GCTTGAAAACCATTCT  1967351
```

3.1.16 NC_045512.2 SARS-Cov-2 25762-25789:

ATAATGAGGCTTTGGCTTTGCTGGAAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25762-25789
Score = 29.2 bits (31),  Expect = 6.2
```

```
 Identities = 23/28 (82%), Gaps = 0/28 (0%)
 Strand=Plus/Minus
Query  12       ATAATGAGGCTTTGGCTTTGCTGGAAAT  39
                 ||| | ||||| | || ||||||||||
Sbjct  1531207  ATATTCAGGCTCTAGCCTTGCTGGAAAT  1531180
```

3.1.17 NC_045512.2 SARS-Cov-2 5592-5610:

ATGAACAATTTAAGAAAGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5592-5610
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  842     ATGAACAATTTAAGAAAGG  860
                ||||| ||||||||||||
Sbjct  369818  ATGAAAAATTTAAGAAAGG  369836
```

3.1.18 NC_045512.2 SARS-Cov-2 29802-29814:

CCTAATGTGTAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29802-29814
Score = 24.7 bits (26),  Expect = 6.3
 Identities = 13/13 (100%), Gaps = 0/13 (0%)
 Strand=Plus/Minus
Query  2        CCTAATGTGTAAA  14
                 |||||||||||||
Sbjct  1720579  CCTAATGTGTAAA  1720567
```

3.1.19 NC_045512.2 SARS-Cov-2 21073-21087:

GTTACAAAAGAAAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21073-21087
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  323     GTTACAAAAGAAAAT  337
                |||||||||||||||
Sbjct  267789  GTTACAAAAGAAAAT  267803
```

3.1.20 NC_045512.2 SARS-Cov-2 7915-7929:

AGAATCATCTGCAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7915-7929
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  165     AGAATCATCTGCAAA  179
               ||||||||||||||
Sbjct  410170  AGAATCATCTGCAAA  410156
```

3.1.21 NC_045512.2 SARS-Cov-2 28969-28983:

CAAAATGTCTGGTAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28969-28983
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  219      CAAAATGTCTGGTAA  233
               ||||||||||||||
Sbjct  1486124  CAAAATGTCTGGTAA  1486110
```

3.1.22 NC_045512.2 SARS-Cov-2 13564-13578:

GTAGCTGGTTTTGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13564-13578
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  814     GTAGCTGGTTTTGCT  828
               ||||||||||||||
Sbjct  624540  GTAGCTGGTTTTGCT  624526
```

3.1.23 NC_045512.2 SARS-Cov-2 2800-2819:

TGATGAAAGGATTGATAAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2800-2819
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  50      TGATGAAAGGATTGATAAAG  69
               || ||||| ||||||||||
Sbjct  986949  TGTTGAAATGATTGATAAAG  986968
```

3.1.24 NC_045512.2 SARS-Cov-2 20867-20881:

TTGGTGCTGGTTCTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20867-20881
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  117     TTGGTGCTGGTTCTG  131
               |||||||||||||||
Sbjct  801235  TTGGTGCTGGTTCTG  801221
```

3.1.25 NC_045512.2 SARS-Cov-2 3940-3959:

AAAACAAGATGATAAGAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3940-3959
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  190     AAAACAAGATGATAAGAAAA  209
               ||||||||||  |||||||
Sbjct  818018  AAAACAAGATGCAAAGAAAA  818037
```

3.1.26 NC_045512.2 SARS-Cov-2 1620-1635:

AAATACTCCAAAAAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1620-1635
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
```

```
 Strand=Plus/Minus
Query  870      AAATACTCCAAAAAGA  885
                ||||||||||||||||
Sbjct  1545385  AAATACTCCAAAAAGA  1545370
```

3.1.27 NC_045512.2 SARS-Cov-2 1131-1147:

AAAAGAAAAAGCTTGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1131-1147
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 17/17 (100%), Gaps = 0/17 (0%)
 Strand=Plus/Plus
Query  381      AAAAGAAAAAGCTTGAT  397
                ||||||||||||||||
Sbjct  1038716  AAAAGAAAAAGCTTGAT  1038732


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1123-1147
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Plus
Query  373     AAGGGTTGAAAAGAAAAAGCTTGAT  397
                || ||||||||||  || ||||||
Sbjct  464789  AACGGTTGAAAAGAGTAACCTTGAT  464813
```

3.1.28 NC_045512.2 SARS-Cov-2 8822-8841:

TTGATTGCTGCAGTCATAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8822-8841
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  72       TTGATTGCTGCAGTCATAAC  91
                ||||| | ||||||||||||
Sbjct  1589447  TTGATCGTTGCAGTCATAAC  1589466
```

3.1.29 NC_045512.2 SARS-Cov-2 26291-26315:

GCGTACTT–CTTTTTCTTGCTTTCGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26291-26315
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 23/27 (85%), Gaps = 2/27 (7%)
 Strand=Plus/Minus
Query  541      GCGTACTT--CTTTTTCTTGCTTTCGT  565
                || |||||  |||||||||||||| ||
Sbjct  1615446  GCTTACTTTGCTTTTTCTTGCTTTGGT  1615420
```

3.1.30 NC_045512.2 SARS-Cov-2 5279-5299:

AACAACTGTTATCTTGCCACT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5279-5299
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  529      AACAACTGTTATCTTGCCACT  549
                |||| |||| ||||||||||
Sbjct  2091448  AACACCTGTAATCTTGCCACT  2091468
```

3.1.31 NC_045512.2 SARS-Cov-2 18999-19023:

ATTATTAG-CAGACAAATTCCCAGTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18999-19023
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 23/26 (88%), Gaps = 1/26 (4%)
 Strand=Plus/Plus
Query  249      ATTATTAG-CAGACAAATTCCCAGTT  273
                ||| |||| |||| ||||||||||||
Sbjct  1052883  ATTTTTAGACAGAAAAATTCCCAGTT  1052908
```

3.1.32 NC_045512.2 SARS-Cov-2 29805-29817:

AATGTGTAAAATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29805-29817
Score = 24.7 bits (26),  Expect = 6.3
 Identities = 13/13 (100%), Gaps = 0/13 (0%)
 Strand=Plus/Plus
Query  5      AATGTGTAAAATT  17
              |||||||||||||
Sbjct  21034  AATGTGTAAAATT  21046
```

3.1.33 NC_045512.2 SARS-Cov-2 16626-16640:

CAAGCTTTTTGCAGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16626-16640
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  876      CAAGCTTTTTGCAGC  890
                ||||||||||||||
Sbjct  2006342  CAAGCTTTTTGCAGC  2006328
```

3.1.34 NC_045512.2 SARS-Cov-2 8561-8583:

GTTAATAATTGGTTGAAGCAGTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8561-8583
Score = 33.7 bits (36),  Expect = 0.15
 Identities = 21/23 (91%), Gaps = 0/23 (0%)
 Strand=Plus/Plus
Query  811     GTTAATAATTGGTTGAAGCAGTT  833
                || || ||||||||||||||||
Sbjct  298021  GTGAAAAATTGGTTGAAGCAGTT  298043
```

3.1.35 NC_045512.2 SARS-Cov-2 12195-12214:

TTAAAAAGTTGAAGAAGTCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12195-12214
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Plus
Query  445     TTAAAAAGTTGAAGAAGTCT  464
               || ||||||||||| |||||
Sbjct  146283  TTCAAAAGTTGAAGGAGTCT  146302
```

3.1.36 NC_045512.2 SARS-Cov-2 23951-23970:

TTTGGTGGTTTTAATTTTTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23951-23970
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  201     TTTGGTGGTTTTAATTTTTC  220
               |||||||||||| |||| ||
Sbjct  429215  TTTGGTGGTTTTCATTTCTC  429234
```

3.1.37 NC_045512.2 SARS-Cov-2 12814-12842:

ACTGTT-ATCCGATTTACAGGATTTGAAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12814-12842
Score = 33.7 bits (36),  Expect = 0.15
 Identities = 26/30 (87%), Gaps = 1/30 (3%)
 Strand=Plus/Minus
Query  64     ACTGTT-ATCCGATTTACAGGATTTGAAAT  92
              |||||| |||||||||  | ||||||||||
Sbjct  50285  ACTGTTTATCCGATTTGAAAGATTTGAAAT  50256
```

3.1.38 NC_045512.2 SARS-Cov-2 8297-8311:

AACAAAGTTGAAAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8297-8311
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  547      AACAAAGTTGAAAAC  561
                |||||||||||||||
Sbjct  1187901  AACAAAGTTGAAAAC  1187887
```

3.1.39 NC_045512.2 SARS-Cov-2 29463-29481:

CTGCAGATTTGGATGATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29463-29481
Score = 26.5 bits (28),  Expect = 9.5
 Identities = 17/19 (89%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  13       CTGCAGATTTGGATGATTT  31
                ||| |||||||||||| ||
Sbjct  1156350  CTGAAGATTTGGATGAATT  1156332
```

3.1.40 NC_045512.2 SARS-Cov-2 8055-8069:

CGTTTTCATCAACTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8055-8069
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  305     CGTTTTCATCAACTT  319
               |||||||||||||||
Sbjct  516444  CGTTTTCATCAACTT  516430
```

3.1.41 NC_045512.2 SARS-Cov-2 27261-27275:

GACTTTTAAAGTTTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27261-27275
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  511     GACTTTTAAAGTTTC  525
               |||||||||||||||
Sbjct  633059  GACTTTTAAAGTTTC  633073
```

3.1.42 NC_045512.2 SARS-Cov-2 15608-15648:

TACAACACAGACTTTATGAGT-GTCTCTATAGAAATAGAGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15608-15648
Score = 39.2 bits (42),  Expect = 0.003
 Identities = 36/42 (86%), Gaps = 3/42 (7%)
 Strand=Plus/Plus
Query  858      TACAACACAGACTTTATGAGT-GTCTCTATAGAAATAGAGAT  898
                |||||  ||||||||||| ||| ||||||| || |||| ||||
Sbjct  1674709  TACAATACAGACTTTAT-AGTCGTCTCTAAAGGAATA-AGAT  1674748
```

3.1.43 NC_045512.2 SARS-Cov-2 12267-12287:

TGGAAAAGATGGCTGATCAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12267-12287
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 20/21 (95%), Gaps = 1/21 (5%)
 Strand=Plus/Minus
Query  517      TGGAAAAGATGGCTGATCAAG  537
                |||||||||||||||| ||||
Sbjct  1612918  TGGAAAAGATGGCTGA-CAAG  1612899
```

3.1.44 NC_045512.2 SARS-Cov-2 14330-14349:

ATTGTGTTAACTGTTTGGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14330-14349
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  580     ATTGTGTTAACTGTTTGGAT  599
                ||||| | ||||||||||||
Sbjct  915770  ATTGTTTGAACTGTTTGGAT  915751
```

3.1.45 NC_045512.2 SARS-Cov-2 15157-15176:

CAAAAATTATTGAAATCAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15157-15176
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Minus
Query  407     CAAAAATTATTGAAATCAAT  426
               ||||| | ||||||||||||
Sbjct  497640  CAAAAGTCATTGAAATCAAT  497621
```

3.1.46 NC_045512.2 SARS-Cov-2 24142-24156:

TTTGCCACCTTTGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24142-24156
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  392      TTTGCCACCTTTGCT  406
               ||||||||||||||
Sbjct  1910772  TTTGCCACCTTTGCT  1910786
```

3.1.47 NC_045512.2 SARS-Cov-2 21947-22005:

AAAGTCTGTGAATTTCAATTTTGTAATGATCCATTTTTGGGTGTTTATTACCACAAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21947-22005
Score = 33.7 bits (36),  Expect = 0.15
 Identities = 44/59 (75%), Gaps = 3/59 (5%)
 Strand=Plus/Minus
Query  197      AAAGTCTGTGAATTTCAATTTTGTAATGATCCATTTTTGGGTGTTTATTACCACAAAAA  255
               ||| ||| || ||||  ||||| | |  ||| | | |||| |||||||||| | |||||
Sbjct  1705768  AAATTCTATGCATTTGGATTTTCTGA--ATCGAATGTTGG-TGTTTATTACAATAAAAA  170571
```

3.1.48 NC_045512.2 SARS-Cov-2 727-741:

TGAAGATTTTCAAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  727-741
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  277     TGAAGATTTTCAAGA  291
               ||||||||||||||
Sbjct  761380  TGAAGATTTTCAAGA  761366
```

3.1.49 NC_045512.2 SARS-Cov-2 14857-14872:

GTTGAAGTTGTTGATA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14857-14872
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  107    GTTGAAGTTGTTGATA  122
              ||||||||||||||||
Sbjct  52408  GTTGAAGTTGTTGATA  52393
```

3.1.50 NC_045512.2 SARS-Cov-2 693-713:

TTGACTTAGGCGACGAGCTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  693-713
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  243      TTGACTTAGGCGACGAGCTTG  263
                ||||||||||||| || ||||
Sbjct  1839755  TTGACTTAGGCGATGAACTTG  1839735
```

3.1.51 NC_045512.2 SARS-Cov-2 8237-8251:

TCACATCAATCTGAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8237-8251
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  487     TCACATCAATCTGAC  501
               |||||||||||||||
Sbjct  457029  TCACATCAATCTGAC  457015
```

3.1.52 NC_045512.2 SARS-Cov-2 8731-8752:

TACAGATACTTGTTTTGCTAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8731-8752
Score = 36.5 bits (39),  Expect = 0.042
 Identities = 21/22 (95%), Gaps = 0/22 (0%)
 Strand=Plus/Minus
Query  931    TACAGATACTTGTTTTGCTAAC  952
              |||| ||||||||||||||||
Sbjct  27382  TACAAATACTTGTTTTGCTAAC  27361
```

3.1.53 NC_045512.2 SARS-Cov-2 533-555:

GCAGAACTCGAAGGCATTCAGTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  533-555
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Minus
Query  83       GCAGAACTCGAAGGCATTCAGTA  105
                |||||  ||  ||  ||||||||||
Sbjct  1030975  GCAGAGCTGGAGGGCATTCAGTA  1030953
```

3.1.54 NC_045512.2 SARS-Cov-2 20251-20266:

ATTGATTTCTTAGAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20251-20266
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  501      ATTGATTTCTTAGAAT  516
                ||||||||||||||||
Sbjct  1818993  ATTGATTTCTTAGAAT  1818978
```

3.1.55 NC_045512.2 SARS-Cov-2 12054-12073:

TTTGTGAAGAAATGCTGGAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12054-12073
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Minus
Query  304      TTTGTGAAGAAATGCTGGAC  323
                |||  ||| ||||||||||||
Sbjct  1332501  TTTTTGAGGAAATGCTGGAC  1332482
```

3.1.56 NC_045512.2 SARS-Cov-2 4921-4935:

CTTTGACAATCTTAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4921-4935
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  171      CTTTGACAATCTTAA  185
                |||||||||||||||
Sbjct  1889748  CTTTGACAATCTTAA  1889762
```

3.1.57 NC_045512.2 SARS-Cov-2 19354-19368:

TTAAAACAATTACCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19354-19368
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  604      TTAAAACAATTACCA  618
                |||||||||||||||
Sbjct  1958680  TTAAAACAATTACCA  1958694
```

3.1.58 NC_045512.2 SARS-Cov-2 28088-28102:

TGGTTCTAAATCACC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28088-28102
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  338     TGGTTCTAAATCACC  352
                |||||||||||||||
Sbjct  741034  TGGTTCTAAATCACC  741048
```

3.1.59 NC_045512.2 SARS-Cov-2 29859-29873:

TAGGAGAATGACaaa

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29859-29873
Score = 23.8 bits (25),  Expect = 8.9
 Identities = 14/15 (93%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  9       TAGGAGAATGACaaa  23
               ||||||||||| |||
Sbjct  660033  TAGGAGAATGAGAAA  660019
```

3.1.60 NC_045512.2 SARS-Cov-2 28517-28531:

GACCAAATTGGCTAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28517-28531
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  767     GACCAAATTGGCTAC  781
               |||||||||||||||
Sbjct  706227  GACCAAATTGGCTAC  706213
```

3.1.61 NC_045512.2 SARS-Cov-2 1024-1041:

ACCTTTTGAAATTAAATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1024-1041
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  274      ACCTTTTGAAATTAAATT  291
                || ||||||||||||||
Sbjct  2041303  ACTTTTTGAAATTAAATT  2041320
```

3.1.62 NC_045512.2 SARS-Cov-2 21670-21685:

TTATTACCCTGACAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21670-21685
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  920      TTATTACCCTGACAAA  935
                ||||||||||||||||
Sbjct  1668230  TTATTACCCTGACAAA  1668215
```

3.1.63 NC_045512.2 SARS-Cov-2 14830-14844:

TGTGATATCAGACAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14830-14844
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  80       TGTGATATCAGACAA  94
                ||||||||||||||
Sbjct  1752307  TGTGATATCAGACAA  1752293
```

3.1.64 NC_045512.2 SARS-Cov-2 1698-1712:

CATCTTTTTCTGCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1693-1712
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  943     TTTGGCATCTTTTTCTGCTT  962
                |||| |||||||||| |||
Sbjct  241762  TTTGCCATCTTTTTCTCCTT  241743


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1698-1712
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  948     CATCTTTTTCTGCTT  962
                |||||||||||||||
```

```
Sbjct  327135  CATCTTTTTCTGCTT  327121


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1693-1712
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  943      TTTGGCATCTTTTTCTGCTT  962
                ||||  |||||||||||  |||
Sbjct  1488055  TTTGTCATCTTTTTCTCCTT  1488074
```

3.1.65 NC_045512.2 SARS-Cov-2 7337-7358:

TTTATTAGTAATTCTTGGCTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7337-7358
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 20/22 (91%), Gaps = 1/22 (5%)
 Strand=Plus/Plus
Query  587     TTTATTAGTAATTCTTGGCTTA  608
                |||||  |||  ||||||||||||
Sbjct  609045  TTTAT-AGTTATTCTTGGCTTA  609065
```

3.1.66 NC_045512.2 SARS-Cov-2 20358-20375:

TGGTTTACATCTACTGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20358-20375
Score = 33.7 bits (36),  Expect = 0.15
 Identities = 18/18 (100%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  608      TGGTTTACATCTACTGAT  625
                ||||||||||||||||||
Sbjct  2138698  TGGTTTACATCTACTGAT  2138715
```

3.1.67 NC_045512.2 SARS-Cov-2 27900-27914:

TTTCTTGTTTTCTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
```

```
Query = NC_045512.2 SARS-Cov-2  27900-27914
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  150      TTTCTTGTTTTCTTA  164
                ||||||||||||||
Sbjct  1598677  TTTCTTGTTTTCTTA  1598663
```

3.1.68 NC_045512.2 SARS-Cov-2 13607-13627:

TCCAAGAAAAGGACGAAGATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13607-13627
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  857      TCCAAGAAAAGGACGAAGATG  877
                ||||||||||||| | |||||
Sbjct  1673267  TCCAAGAAAAGGATGCAGATG  1673247
```

3.1.69 NC_045512.2 SARS-Cov-2 21223-21238:

TGGTGGACAGCCTTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21223-21238
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  473      TGGTGGACAGCCTTTG  488
                ||||||||||||||||
Sbjct  1862254  TGGTGGACAGCCTTTG  1862239
```

3.1.70 NC_045512.2 SARS-Cov-2 24943-24963:

TGTTGTAATAGGAATTGTCAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24943-24963
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  193      TGTTGTAATAGGAATTGTCAA  213
```

```
                |||| |||||||||||| |||
Sbjct  619296  TGTTCTAATAGGAATTGGCAA  619276
```

3.1.71 NC_045512.2 SARS-Cov-2 20436-20454:

CAGTACAGTTAAAAACTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20436-20454
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  686     CAGTACAGTTAAAAACTAT  704
                ||||| ||||||||||||
Sbjct  753291  CAGTATAGTTAAAAACTAT  753273
```

3.1.72 NC_045512.2 SARS-Cov-2 7511-7533:

AATAGAGCAACAAGAGTCGAATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7511-7533
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Minus
Query  761      AATAGAGCAACAAGAGTCGAATG  783
                ||| ||| || ||||||||||||
Sbjct  1640661  AATTGAGGAAGAAGAGTCGAATG  1640639
```

3.1.73 NC_045512.2 SARS-Cov-2 16528-16551:

GTTGGTAGCGATAATGTTACTGAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16528-16551
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 21/24 (88%), Gaps = 0/24 (0%)
 Strand=Plus/Minus
Query  778      GTTGGTAGCGATAATGTTACTGAC  801
                |||||||||||  | |||| |||||
Sbjct  1498616  GTTGGTAGCGAAATTGTTTCTGAC  1498593
```

3.1.74 NC_045512.2 SARS-Cov-2 24619-24639:

AGCTTCTGCTAATCTTGCTGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24619-24639
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  869      AGCTTCTGCTAATCTTGCTGC  889
                ||||  ||||||||||| |||
Sbjct  1449163  AGCTACTGCTAATCTTGATGC  1449143
```

3.1.75 NC_045512.2 SARS-Cov-2 20145-20159:

GTTCAATTATTATAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20145-20159
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  395     GTTCAATTATTATAA  409
               |||||||||||||||
Sbjct  631427  GTTCAATTATTATAA  631441
```

3.1.76 NC_045512.2 SARS-Cov-2 1618-1647:

TGAAATACTCCAAAAAGAGAAAGTCA-ACAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1618-1647
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 26/31 (84%), Gaps = 4/31 (13%)
 Strand=Plus/Minus
Query  868     TGAAATACTCCAAAAAGAGAAAGTCA-ACAT  897
               ||||||||    |||||||||||||| ||||
Sbjct  903088  TGAAATACG---AAAAGAGAAAGTCAGACAT  903061
```

3.1.77 NC_045512.2 SARS-Cov-2 22393-22412:

AAAATATAATGAAAATGGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22393-22412
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  643      AAAATATAATGAAAATGGAA  662
                || |||||||||||||| ||
Sbjct  2125326  AACATATAATGAAAATGAAA  2125307
```

3.1.78 NC_045512.2 SARS-Cov-2 25443-25458:

AGGTGAAATCAAGGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25443-25458
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  693     AGGTGAAATCAAGGAT  708
                ||||||||||||||||
Sbjct  739501  AGGTGAAATCAAGGAT  739516
```

3.1.79 NC_045512.2 SARS-Cov-2 9350-9379:

AATATGTTTACACCACTAATTCAACCTATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9350-9379
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 24/30 (80%), Gaps = 0/30 (0%)
 Strand=Plus/Minus
Query  600     AATATGTTTACACCACTAATTCAACCTATT  629
                ||||| ||| ||   | ||||||||||||
Sbjct  554669  AATATTTTTCCATTTCAAATTCAACCTATT  554640
```

3.1.80 NC_045512.2 SARS-Cov-2 18824-18838:

AAGTCCATGGTAATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18824-18838
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
```

```
 Strand=Plus/Minus
Query  74      AAGTCCATGGTAATG  88
               ||||||||||||||
Sbjct  228900  AAGTCCATGGTAATG  228886
```

3.1.81 NC_045512.2 SARS-Cov-2 2567-2591:

CAAC-CTACTAGTGAAGCTGTTGAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2567-2591
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 23/26 (88%), Gaps = 1/26 (4%)
 Strand=Plus/Minus
Query  817      CAAC-CTACTAGTGAAGCTGTTGAAG  841
                |||| ||||| ||| ||||||||||
Sbjct  1808290  CAACGCTACTCGTGCAGCTGTTGAAG  1808265
```

3.1.82 NC_045512.2 SARS-Cov-2 27336-27353:

TGAGAATAAATATTCTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27336-27353
Score = 33.7 bits (36),  Expect = 0.15
 Identities = 18/18 (100%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  586      TGAGAATAAATATTCTCA  603
                ||||||||||||||||||
Sbjct  2141078  TGAGAATAAATATTCTCA  2141095
```

3.1.83 NC_045512.2 SARS-Cov-2 13938-13959:

AGAAAACCCAGATATATTACGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13938-13959
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 20/22 (91%), Gaps = 0/22 (0%)
 Strand=Plus/Plus
Query  188      AGAAAACCCAGATATATTACGC  209
                || ||||| ||||||||||||
Sbjct  1375694  AGCAAACCGAGATATATTACGC  1375715
```

3.1.84 NC_045512.2 SARS-Cov-2 17680-17694:

CATGATGTTTCATCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17680-17694
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  930     CATGATGTTTCATCT  944
               ||||||||||||||
Sbjct  781895  CATGATGTTTCATCT  781881
```

3.1.85 NC_045512.2 SARS-Cov-2 28811-28825:

AGTCAAGCCTCTTCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28811-28825
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  61       AGTCAAGCCTCTTCT  75
               ||||||||||||||
Sbjct  2011921  AGTCAAGCCTCTTCT  2011935
```

3.1.86 NC_045512.2 SARS-Cov-2 6781-6800:

CTTTACTTTATTGCTACAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6781-6800
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  31      CTTTACTTTATTGCTACAAT  50
               |||| |||||||||| |||
Sbjct  267335  CTTTCCTTTATTGCTAAAAT  267316
```

3.1.87 NC_045512.2 SARS-Cov-2 3477-3497:

TTGCAGGAGCCTTAAATAAGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3477-3497
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  727     TTGCAGGAGCCTTAAATAAGG  747
                || ||||| ||||||||||||
Sbjct  633514  TTCCAGGAACCTTAAATAAGG  633534
```

3.1.88 NC_045512.2 SARS-Cov-2 26551-26568:

TTGAAGAGCTTAAAAAGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26551-26568
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  801      TTGAAGAGCTTAAAAAGC  818
                 |||| ||||||||||||
Sbjct  2098347  TTGATGAGCTTAAAAAGC  2098330
```

3.1.89 NC_045512.2 SARS-Cov-2 29855-29866:

TTCTTAGGAGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29855-29866
Score = 22.9 bits (24),  Expect = 8.9
 Identities = 12/12 (100%), Gaps = 0/12 (0%)
 Strand=Plus/Minus
Query  5       TTCTTAGGAGAA  16
               ||||||||||||
Sbjct  368312  TTCTTAGGAGAA  368301
```

3.1.90 NC_045512.2 SARS-Cov-2 6615-6635:

TAGGTTTGAAAACCCTTGCTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6615-6635
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
```

```
 Strand=Plus/Minus
Query  865      TAGGTTTGAAAACCCTTGCTA  885
                ||||||||||||  |||||||
Sbjct  1371319  TAGGTTTGAAAAAGCTTGCTA  1371299
```

3.1.91 NC_045512.2 SARS-Cov-2 29285-29299:

AAATTGGATGACAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29285-29299
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  535     AAATTGGATGACAAA  549
               |||||||||||||||
Sbjct  936867  AAATTGGATGACAAA  936853
```

3.1.92 NC_045512.2 SARS-Cov-2 27577-27609:

CAATTTGCTTTTGCTTGTCCTG-ACGGCGTAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27577-27609
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 28/34 (82%), Gaps = 1/34 (3%)
 Strand=Plus/Minus
Query  827  CAATTTGCTTTTGCTTGTCCTG-ACGGCGTAAAA  859
            |||| || |||||||||||| || | ||||| |||
Sbjct  941  CAATCTGTTTTTGCTTGTCATGAAGGGCGTTAAA  908
```

3.1.93 NC_045512.2 SARS-Cov-2 12192-12211:

TTCTTAAAAAGTTGAAGAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12192-12211
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  442     TTCTTAAAAAGTTGAAGAAG  461
               |||| |||||||||| |||
Sbjct  558372  TTCTAAAAAAGTTGAACAAG  558391
```

3.1.94 NC_045512.2 SARS-Cov-2 21546-21564:

TAACAACTAAACGAACAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21546-21564
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  796      TAACAACTAAACGAACAAT  814
                ||||||||||||||| |||
Sbjct  1318293  TAACAACTAAACGAAGAAT  1318311
```

3.1.95 NC_045512.2 SARS-Cov-2 26114-26131:

AAGAACATGTCCAAATTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26114-26131
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  364      AAGAACATGTCCAAATTC  381
                |||||||||| ||||||
Sbjct  1806992  AAGAACATGTCAAAATTC  1807009
```

3.1.96 NC_045512.2 SARS-Cov-2 26815-26839:

CTTCTTTCAGACTGTTTGCGCGTAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26815-26839
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Minus
Query  65      CTTCTTTCAGACTGTTTGCGCGTAC  89
               ||||||||||  || |||| ||||
Sbjct  431298  CTTCTTTCAGAAAGTCTGCGGGTAC  431274
```

3.1.97 NC_045512.2 SARS-Cov-2 15148-15162:

CAGTTTCATCAAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15148-15162
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  398     CAGTTTCATCAAAAA  412
               |||||||||||||||
Sbjct  559437  CAGTTTCATCAAAAA  559451
```

3.1.98 NC_045512.2 SARS-Cov-2 7822-7848:

TCATTTTGTTAACTT-AGACAACCTGAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7822-7848
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 24/28 (86%), Gaps = 1/28 (4%)
 Strand=Plus/Minus
Query  972      TCATTTTGTTAACTT-AGACAACCTGAG  998
                ||| | ||||| ||| ||||||||||||
Sbjct  1165848  TCAGTCTGTTATCTTTAGACAACCTGAG  1165821
```

3.1.99 NC_045512.2 SARS-Cov-2 11762-11782:

AATAGCATAGATGCCTTCAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11762-11782
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  12      AATAGCATAGATGCCTTCAAA  32
               |||| |||| ||||||||||
Sbjct  730476  AATATCATAAATGCCTTCAAA  730456
```

3.1.100 NC_045512.2 SARS-Cov-2 1632-1651:

AAGAGAAAGTCAACATCAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1632-1651
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Minus
Query  882     AAGAGAAAGTCAACATCAAT  901
               ||||| | ||||||||||||
Sbjct  975891  AAGAGTACGTCAACATCAAT  975872
```

3.1.101 NC_045512.2 SARS-Cov-2 19759-19774:

ACAACATTACCTGTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19759-19774
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  9       ACAACATTACCTGTTA  24
               ||||||||||||||||
Sbjct  664905  ACAACATTACCTGTTA  664890
```

3.1.102 NC_045512.2 SARS-Cov-2 9781-9800:

TAGTACTTTTGAAGAAGCTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9781-9800
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  31       TAGTACTTTTGAAGAAGCTG  50
                || ||||||||||||||||||
Sbjct  1283169  TATTACTTTTGAAGAAGCTG  1283150
```

3.1.103 NC_045512.2 SARS-Cov-2 16454-16477:

AATCACATAAACCACCCATTAGTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16454-16477
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 21/24 (88%), Gaps = 0/24 (0%)
 Strand=Plus/Plus
Query  704      AATCACATAAACCACCCATTAGTT  727
                |||||  |||| ||||||||||||
Sbjct  1114933  AATCATTTAAAGCACCCATTAGTT  1114956
```

3.1.104 NC_045512.2 SARS-Cov-2 17086-17101:

CCTGGTACTGGTAAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17086-17101
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  336     CCTGGTACTGGTAAGA  351
               ||||||||||||||||
Sbjct  420220  CCTGGTACTGGTAAGA  420205
```

3.1.105 NC_045512.2 SARS-Cov-2 23896-23910:

CCAAGAAGTTTTTGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23896-23910
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  146     CCAAGAAGTTTTTGC  160
               |||||||||||||||
Sbjct  581322  CCAAGAAGTTTTTGC  581336
```

3.1.106 NC_045512.2 SARS-Cov-2 3093-3115:

CATCAACTCAATATGAGTATGGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3093-3115
Score = 33.7 bits (36),  Expect = 0.15
 Identities = 21/23 (91%), Gaps = 0/23 (0%)
 Strand=Plus/Minus
Query  343      CATCAACTCAATATGAGTATGGT  365
                ||| ||||||||||||||| ||
Sbjct  1055874  CATAAACTCAATATGAGTATAGT  1055852
```

3.1.107 NC_045512.2 SARS-Cov-2 2790-2817:

CTTTTGAACTTGATGAAAGGATTGATAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2790-2817
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 23/28 (82%), Gaps = 0/28 (0%)
 Strand=Plus/Minus
Query  40     CTTTTGAACTTGATGAAAGGATTGATAA  67
              || ||| ||| ||||  ||||||||||
Sbjct  53064  CTCTTGTACTCGATGTCAGGATTGATAA  53037
```

3.1.108 NC_045512.2 SARS-Cov-2 3918-3938:

GTAAACCTTCAGTTGAACAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3918-3938
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  168      GTAAACCTTCAGTTGAACAGA  188
                ||||||||||||||| | |||
Sbjct  1685667  GTAAACCTTCAGTTGTAAAGA  1685647
```

3.1.109 NC_045512.2 SARS-Cov-2 5862-5881:

TTTTCTACAAAGAAAACAGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5862-5881
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  112     TTTTCTACAAAGAAAACAGT  131
               |||| |||||||||| |||
Sbjct  650416  TTTTATACAAAGAAAAGAGT  650397
```

3.1.110 NC_045512.2 SARS-Cov-2 27577-27599:

CAATTTGCTTTTGCTTGTCCTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27577-27599
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
```

```
 Strand=Plus/Minus
Query  977  CAATTTGCTTTTGCTTGTCCTGA  999
            |||| || ||||||||||| |||
Sbjct  941  CAATCTGTTTTTGCTTGTCATGA  919
```

3.1.111 NC_045512.2 SARS-Cov-2 21437-21452:

TGTCTTTAAAAGAAGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21437-21452
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  687      TGTCTTTAAAAGAAGG  702
                |||||||||||||||
Sbjct  2124147  TGTCTTTAAAAGAAGG  2124132
```

3.1.112 NC_045512.2 SARS-Cov-2 3176-3196:

CCTGAAGAAGAGCAAGAAGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3176-3196
Score = 34.6 bits (37),  Expect = 0.15
 Identities = 20/21 (95%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  426      CCTGAAGAAGAGCAAGAAGAA  446
                |||||||||||||||||| ||
Sbjct  1148436  CCTGAAGAAGAGCAAGAAAAA  1148456
```

3.1.113 NC_045512.2 SARS-Cov-2 443-457:

GTTTTGCCTCAACTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  443-457
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  393     GTTTTGCCTCAACTT  407
               |||||||||||||||
Sbjct  733746  GTTTTGCCTCAACTT  733732
```

3.1.114 NC_045512.2 SARS-Cov-2 17126-17145:

TCTACTACCCTTCTGCTCGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17126-17145
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  376      TCTACTACCCTTCTGCTCGC  395
                ||||||||||| ||||| ||
Sbjct  1147296  TCTACTACCCTGCTGCTGGC  1147315
```

3.1.115 NC_045512.2 SARS-Cov-2 7290-7304:

GATTGGCTGCAATCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7290-7304
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  540    GATTGGCTGCAATCA  554
               |||||||||||||||
Sbjct  87491  GATTGGCTGCAATCA  87477
```

3.1.116 NC_045512.2 SARS-Cov-2 15905-15922:

AGGGTGATGATTATGTGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15905-15922
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  155     AGGGTGATGATTATGTGT  172
                |||||||||||||||| ||
Sbjct  926675  AGGGTGATGATTATGAGT  926692
```

3.1.117 NC_045512.2 SARS-Cov-2 7791-7811:

GTCAAAAGACTTATGAAAGAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7791-7811
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  41      GTCAAAAGACTTATGAAAGAC  61
               ||| ||| ||||||||||||
Sbjct  352120  GTCCAAATACTTATGAAAGAC  352100
```

3.1.118 NC_045512.2 SARS-Cov-2 17436-17451:

CGACCCTGCTCAATTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17436-17451
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  686      CGACCCTGCTCAATTA  701
                ||||||||||||||||
Sbjct  1323958  CGACCCTGCTCAATTA  1323943
```

3.1.119 NC_045512.2 SARS-Cov-2 9321-9335:

GTGGTGTAGATGCTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9321-9335
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  571     GTGGTGTAGATGCTG  585
               |||||||||||||||
Sbjct  431066  GTGGTGTAGATGCTG  431052
```

3.1.120 NC_045512.2 SARS-Cov-2 3118-3140:

TGAAGATGATTACCAAGGTAAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3118-3140
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
```

```
 Strand=Plus/Plus
Query  368      TGAAGATGATTACCAAGGTAAAC  390
                 |||||   ||||||||||||||||
Sbjct  1070231  TGAAGCGCATTACCAAGGTAAAC  1070253
```

3.1.121 NC_045512.2 SARS-Cov-2 7897-7923:

TGGTAAATCAAAATG-TGAAGAATCATC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7897-7923
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 24/28 (86%), Gaps = 1/28 (4%)
 Strand=Plus/Minus
Query  147      TGGTAAATCAAAATG-TGAAGAATCATC  173
                 |||||||||||||| || | | |||||
Sbjct  1909695  TGGTAAATCAAAATGATGTAAATTCATC  1909668
```

3.1.122 NC_045512.2 SARS-Cov-2 23519-23534:

GCTGAACATGTCAACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23519-23534
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  769      GCTGAACATGTCAACA  784
                 ||||||||||||||||
Sbjct  1438634  GCTGAACATGTCAACA  1438619
```

3.1.123 NC_045512.2 SARS-Cov-2 4916-4930:

ATCACCTTTGACAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4916-4930
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  166      ATCACCTTTGACAAT  180
                 |||||||||||||||
Sbjct  1172942  ATCACCTTTGACAAT  1172956
```

3.1.124 NC_045512.2 SARS-Cov-2 24562-24583:

ACTTCAAAGTTTGCAGACATAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24562-24583
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 20/22 (91%), Gaps = 0/22 (0%)
 Strand=Plus/Minus
Query  812     ACTTCAAAGTTTGCAGACATAT  833
                |||||||||||  |||  ||||||
Sbjct  688176  ACTTCAAAGTTAGCATACATAT  688155
```

3.1.125 NC_045512.2 SARS-Cov-2 8731-8750:

TACAGATACTTGTTTTGCTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8731-8750
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  981    TACAGATACTTGTTTTGCTA  1000
               ||||  ||||||||||||||
Sbjct  27382  TACAAATACTTGTTTTGCTA  27363
```

3.1.126 NC_045512.2 SARS-Cov-2 3422-3446:

AAACCAACAGTGGTTGTTAATGCAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3422-3446
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 22/25 (88%), Gaps = 1/25 (4%)
 Strand=Plus/Minus
Query  672     AAACCAACAGTGGTTGTTAATGCAG  696
                |||||||||||  |||||  ||  ||||
Sbjct  620421  AAACCAACAGTCGTTGTGAA-GCAG  620398
```

3.1.127 NC_045512.2 SARS-Cov-2 19713-19738:

TTACACAAAAGTTGATGGTGTTGATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19713-19738
Score = 35.6 bits (38),  Expect = 0.042
 Identities = 24/26 (92%), Gaps = 1/26 (4%)
 Strand=Plus/Plus
Query  963      TTACACAAAAGTTGATGGTGTTGATG  988
                ||||||||||||||| || |||||
Sbjct  1095304  TTACACAAAAGTTGATGATG-TGATG  1095328
```

3.1.128 NC_045512.2 SARS-Cov-2 2121-2140:

CTGTTTATGAAAAACTCAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2121-2140
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  371      CTGTTTATGAAAAACTCAAA  390
                ||||||||||||  ||||||
Sbjct  1775905  CTGTTTATGAAATTCTCAAA  1775886
```

3.1.129 NC_045512.2 SARS-Cov-2 2804-2839:

GAAAGGATTGATAAAGTACTTAATGAGAAGTGCTCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2804-2839
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 28/36 (78%), Gaps = 0/36 (0%)
 Strand=Plus/Plus
Query  54       GAAAGGATTGATAAAGTACTTAATGAGAAGTGCTCT  89
                ||||  ||||||||||||  |  |||| || || |||
Sbjct  1279965  GAAATGATTGATAAAGTTTTACATGAAAACTGGTCT  1280000
```

3.1.130 NC_045512.2 SARS-Cov-2 19906-19924:

ATATCTACTATTGGTGTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19906-19924
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
```

```
 Strand=Plus/Minus
Query  156      ATATCTACTATTGGTGTTT  174
                ||||||  ||||||||||||
Sbjct  1534259  ATATCTGCTATTGGTGTTT  1534241
```

3.1.131 NC_045512.2 SARS-Cov-2 22934-22962:

AAGTCTAATCTCAAACCTTTTGAGAGAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22934-22962
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 24/29 (83%), Gaps = 0/29 (0%)
 Strand=Plus/Minus
Query  184      AAGTCTAATCTCAAACCTTTTGAGAGAGA  212
                || ||||||| | || | ||||||||||||
Sbjct  1419452  AATTCTAATCGCCAAACCTTTGAGAGAGA  1419424
```

3.1.132 NC_045512.2 SARS-Cov-2 22158-22180:

GTTATTTTAAAATATATTCTAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22145-22180
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 30/37 (81%), Gaps = 1/37 (3%)
 Strand=Plus/Minus
Query  395      AAGAATATTGATG-GTTATTTTAAAATATATTCTAAG  430
                ||||||  ||||   ||| ||||||||||||  || |||
Sbjct  1807011  AAGAATTTTGACATGTTCTTTTAAAATATAGTCCAAG  1806975


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22158-22180
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Minus
Query  8        GTTATTTTAAAATATATTCTAAG  30
                ||| ||||||||||||  || |||
Sbjct  1806997  GTTCTTTTAAAATATAGTCCAAG  1806975
```

3.1.133 NC_045512.2 SARS-Cov-2 2913-2930:

TGCAACCAGTATCTGAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2913-2930
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  163      TGCAACCAGTATCTGAAT  180
                |||||  ||||||||||||
Sbjct  2123336  TGCAAGCAGTATCTGAAT  2123319
```

3.1.134 NC_045512.2 SARS-Cov-2 18627-18642:

GTATTTTGTGAAAATA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18627-18642
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  877    GTATTTTGTGAAAATA  892
              ||||||||||||||||
Sbjct  78641  GTATTTTGTGAAAATA  78626
```

3.1.135 NC_045512.2 SARS-Cov-2 11981-11995:

GAAGCCTTTGAAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11981-11995
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  231      GAAGCCTTTGAAAAA  245
                |||||||||||||||
Sbjct  1210323  GAAGCCTTTGAAAAA  1210309
```

3.1.136 NC_045512.2 SARS-Cov-2 11418-11433:

TTTATAAAGTTTATTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11418-11433
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  668      TTTATAAAGTTTATTA  683
                ||||||||||||||||
Sbjct  1217541  TTTATAAAGTTTATTA  1217526
```

3.1.137 NC_045512.2 SARS-Cov-2 12494-12513:

TATAACACATATAAAAATAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12494-12513
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  744     TATAACACATATAAAAATAC  763
                ||| |||| ||||||||||
Sbjct  525344  TATCACACTTATAAAAATAC  525363
```

3.1.138 NC_045512.2 SARS-Cov-2 13888-13902:

AATTGTTGTGATGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13888-13902
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  138      AATTGTTGTGATGAT  152
                |||||||||||||||
Sbjct  1585876  AATTGTTGTGATGAT  1585890
```

3.1.139 NC_045512.2 SARS-Cov-2 13924-13947:

TGGTATGATTTTGTAGAAAACCCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13924-13947
Score = 35.6 bits (38),  Expect = 0.042
 Identities = 22/24 (92%), Gaps = 0/24 (0%)
```

```
 Strand=Plus/Plus
Query  174      TGGTATGATTTTGTAGAAAACCCA  197
                 |||||||||||| ||||||| |||
Sbjct  1636461  TGGTATGATTTTTTAGAAAATCCA  1636484
```

3.1.140 NC_045512.2 SARS-Cov-2 7063-7077:

CAGAGAAGGCTATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7063-7077
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  313      CAGAGAAGGCTATTT  327
                 |||||||||||||||
Sbjct  1943727  CAGAGAAGGCTATTT  1943713
```

3.1.141 NC_045512.2 SARS-Cov-2 12933-12954:

CTAAAGTGAAGTATTTATACTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12933-12954
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 20/22 (91%), Gaps = 1/22 (5%)
 Strand=Plus/Minus
Query  183    CTAAAGTGAAGTATTTATACTT  204
               ||||| |||||||||||| ||
Sbjct  59411  CTAAA-TGAAGTATTTATAATT  59391
```

3.1.142 NC_045512.2 SARS-Cov-2 12060-12074:

AAGAAATGCTGGACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12060-12074
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  310     AAGAAATGCTGGACA  324
                |||||||||||||||
Sbjct  604892  AAGAAATGCTGGACA  604906
```

3.1.143 NC_045512.2 SARS-Cov-2 12269-12289:

GAAAAGATGGCTGATCAAGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12269-12289
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  519     GAAAAGATGGCTGATCAAGCT  539
               ||||||||||||||| || ||
Sbjct  152922  GAAAAGATGGCTGATGAATCT  152942
```

3.1.144 NC_045512.2 SARS-Cov-2 3942-3965:

AACAAGATGATAAGAAAATCAAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3942-3965
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 21/24 (88%), Gaps = 0/24 (0%)
 Strand=Plus/Minus
Query  192      AACAAGATGATAAGAAAATCAAAG  215
               || |||| || ||||||||||||
Sbjct  1647590  AAGAAGAAGAAAAGAAAATCAAAG  1647567
```

3.1.145 NC_045512.2 SARS-Cov-2 11988-12019:

TTGAAAAAATGGTTTCACTACTTTCTGTTTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11988-12019
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 26/32 (81%), Gaps = 0/32 (0%)
 Strand=Plus/Plus
Query  238      TTGAAAAAATGGTTTCACTACTTTCTGTTTTG  269
               |||||||| |  ||| | || ||||||||||
Sbjct  1287268  TTGAAAAAGTTCTTTTAATATTTTCTGTTTTG  1287299
```

3.1.146 NC_045512.2 SARS-Cov-2 18128-18148:

ACACTAAATTCAAAACTGAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18128-18148
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  378      ACACTAAATTCAAAACTGAAG  398
                ||||||||||||||  |||||
Sbjct  1414826  ACACTAAATTCAAAGGTGAAG  1414806
```

3.1.147 NC_045512.2 SARS-Cov-2 14769-14787:

TCAGGATGGTAATGCTGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14769-14787
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  19       TCAGGATGGTAATGCTGCT  37
                ||||||||||| ||||||
Sbjct  2133560  TCAGGATGGTAAAGCTGCT  2133578
```

3.1.148 NC_045512.2 SARS-Cov-2 12004-12023:

ACTACTTTCTGTTTTGCTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12004-12023
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  254      ACTACTTTCTGTTTTGCTTT  273
                ||||||||||  |||||||
Sbjct  1298293  ACTACTTTCTGAATTGCTTT  1298312
```

3.1.149 NC_045512.2 SARS-Cov-2 28-47:

CAAACCAACCAACTTTCGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28-47
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Plus
Query  28       CAAACCAACCAACTTTCGAT  47
                ||||||||||| | |||||
Sbjct  2093116  CAAACCAACCAAGTATCGAT  2093135
```

3.1.150 NC_045512.2 SARS-Cov-2 4204-4230:

AGCGAAAGCTTTGAGAAAAGT–GCCAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4204-4230
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 24/29 (83%), Gaps = 2/29 (7%)
 Strand=Plus/Plus
Query  454      AGCGAAAGCTTTGAGAAAAGT--GCCAAC  480
                ||| || |||||||||||| |  ||||||
Sbjct  1014510  AGCAAAGGCTTTGAGAAAACTACGCCAAC  1014538
```

3.1.151 NC_045512.2 SARS-Cov-2 4749-4763:

AAACACCTGAAGAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4749-4763
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  949      AAACACCTGAAGAAC  963
                |||||||||||||||
Sbjct  1727250  AAACACCTGAAGAAC  1727236
```

3.1.152 NC_045512.2 SARS-Cov-2 7569-7583:

ATGTCTATGCTAATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7569-7583
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  819      ATGTCTATGCTAATG  833
                |||||||||||||||
Sbjct  1321020  ATGTCTATGCTAATG  1321006
```

3.1.153 NC_045512.2 SARS-Cov-2 12993-13012:

TTGGTAGTTTAGCTGCCACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12993-13012
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  243      TTGGTAGTTTAGCTGCCACA  262
                ||||||||||||||||||||
Sbjct  1918768  TTGGTAATTTAGCTGCCACA  1918787
```

3.1.154 NC_045512.2 SARS-Cov-2 14981-15013:

TTTATTATGATTCAATGAGTTATGAGGATCAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14981-15013
Score = 35.6 bits (38),  Expect = 0.042
 Identities = 28/33 (85%), Gaps = 2/33 (6%)
 Strand=Plus/Plus
Query  231      TTTATTATGATTCAATGAGTTATGAGGATCAAG  263
                ||||||||||   | ||||||||||||| |||
Sbjct  1279767  TTTATTATGAA--ATTGAGTTATGAGGATAAAG  1279797
```

3.1.155 NC_045512.2 SARS-Cov-2 22823-22837:

TATAATTATAAATTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22823-22837
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  73       TATAATTATAAATTA  87
                |||||||||||||||
Sbjct  1707040  TATAATTATAAATTA  1707026
```

3.1.156 NC_045512.2 SARS-Cov-2 3875-3895:

GCTGAGATTCCTAAAGAGGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3875-3895
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  125     GCTGAGATTCCTAAAGAGGAA  145
               |||||||  ||||||||||||
Sbjct  642631  GCTGAGAAACCTAAAGAGGAA  642651
```

3.1.157 NC_045512.2 SARS-Cov-2 20151-20168:

TTATTATAAGAAAGTTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20151-20168
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  401      TTATTATAAGAAAGTTGA  418
                ||||  ||||||||||||
Sbjct  1342071  TTATAATAAGAAAGTTGA  1342054
```

3.1.158 NC_045512.2 SARS-Cov-2 28953-28978:

TGAACCAGCTTGAGAGCAAAATGTCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28948-28978
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 26/31 (84%), Gaps = 1/31 (3%)
 Strand=Plus/Plus
Query  198      CAGATTGAACCAGCTTGAGAGCAAAATGTCT  228
                |||||  ||||||||||||  |  |||||||
Sbjct  1424304  CAGAT-GAACCAGCTTGAGCTCCTAATGTCT  1424333


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28953-28978
Score = 30.1 bits (32),  Expect = 1.7
 Identities = 22/26 (85%), Gaps = 0/26 (0%)
 Strand=Plus/Plus
Query  3        TGAACCAGCTTGAGAGCAAAATGTCT  28
                ||||||||||||||  |  |||||||
```

```
Sbjct  1424308  TGAACCAGCTTGAGCTCCTAATGTCT  1424333
```

3.1.159 NC_045512.2 SARS-Cov-2 19986-20009:

TTTTGATGGTAGAGTTGATGGTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19986-20009
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 22/24 (92%), Gaps = 1/24 (4%)
 Strand=Plus/Plus
Query  236     TTTTGATGGTAGAGTTGATGGTCA  259
               |||||||||||||| | |||||||
Sbjct  631262  TTTTGATGGTAGAGGT-ATGGTCA  631284
```

3.1.160 NC_045512.2 SARS-Cov-2 29816-29839:

TTAATTTTAGTAGTGCTATCCCCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29816-29839
Score = 26.5 bits (28),  Expect = 2.9
 Identities = 20/24 (83%), Gaps = 0/24 (0%)
 Strand=Plus/Minus
Query  66      TTAATTTTAGTAGTGCTATCCCCA  89
               |||||||||| ||  || |||||
Sbjct  741405  TTAATTTTAGTCGTATTAACCCCA  741382
```

3.1.161 NC_045512.2 SARS-Cov-2 7652-7670:

ACATTTATTAGTGATGAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7652-7670
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  902     ACATTTATTAGTGATGAAG  920
               |||||| ||||||||||||
Sbjct  724225  ACATTTGTTAGTGATGAAG  724243
```

3.1.162 NC_045512.2 SARS-Cov-2 8217-8239:

TTGTTGAATGTCTTAAATTGTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8217-8239
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Plus
Query  467      TTGTTGAATGTCTTAAATTGTCA  489
                ||||||  ||  |  ||||||||||
Sbjct  1771372  TTGTTGTATTTATTAAATTGTCA  1771394
```

3.1.163 NC_045512.2 SARS-Cov-2 8187-8201:

TTGTTGATTCAGATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8187-8201
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  437      TTGTTGATTCAGATG  451
                |||||||||||||||
Sbjct  1673324  TTGTTGATTCAGATG  1673310
```

3.1.164 NC_045512.2 SARS-Cov-2 9829-9848:

AATGTATCTAAAGTTGCGTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9829-9848
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  79       AATGTATCTAAAGTTGCGTA  98
                |||  ||||||||||||  ||
Sbjct  1719655  AATTTATCTAAAGTTGCATA  1719674
```

3.1.165 NC_045512.2 SARS-Cov-2 4218-4232:

GAAAAGTGCCAACAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4218-4232
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  468      GAAAAGTGCCAACAG  482
                ||||||||||||||
Sbjct  1258685  GAAAAGTGCCAACAG  1258671
```

3.1.166 NC_045512.2 SARS-Cov-2 15898-15915:

GTTAAACAGGGTGATGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15898-15915
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  148      GTTAAACAGGGTGATGAT  165
                |||||| ||||||||||
Sbjct  1936476  GTTAAATAGGGTGATGAT  1936493
```

3.1.167 NC_045512.2 SARS-Cov-2 1530-1549:

ATTGGGTTCCACGTGCTAGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1530-1549
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  780      ATTGGGTTCCACGTGCTAGC  799
                |||||||||| ||| ||||
Sbjct  1947129  ATTGGGTTCCAAGTGTTAGC  1947148
```

3.1.168 NC_045512.2 SARS-Cov-2 21725-21744:

TTCTTACCTTTCTTTTCCAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21725-21744
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Minus
Query  975     TTCTTACCTTTCTTTTCCAA  994
               |||||  ||||||||||||
Sbjct  551486  TTCTTTACTTTCTTTTCCAA  551467
```

3.1.169 NC_045512.2 SARS-Cov-2 14451-14465:

TGTTCCATTTGTAGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14451-14465
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  701      TGTTCCATTTGTAGT  715
               |||||||||||||||
Sbjct  1056454  TGTTCCATTTGTAGT  1056440
```

3.1.170 NC_045512.2 SARS-Cov-2 28885-28903:

AACTTCTCCTGCTAGAATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28885-28903
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  135      AACTTCTCCTGCTAGAATG  153
               || |||||||||||||||||
Sbjct  1535620  AATTTCTCCTGCTAGAATG  1535638
```

3.1.171 NC_045512.2 SARS-Cov-2 23166-23189:

AAAACAAATGTGTCAATTTCAACT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23166-23189
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 21/24 (88%), Gaps = 0/24 (0%)
 Strand=Plus/Plus
Query  416     AAAACAAATGTGTCAATTTCAACT  439
               ||||||||||   ||||||||||||
Sbjct  156074  AAAACAAATGAAACAATTTCAACT  156097
```

3.1.172 NC_045512.2 SARS-Cov-2 20566-20585:

AAGGTTGTCAAAGTGACTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20566-20585
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 19/20 (95%), Gaps = 1/20 (5%)
 Strand=Plus/Plus
Query  816     AAGGTTGTCAAAGTGACTAT  835
               ||||| ||||||||||||||
Sbjct  553699  AAGGT-GTCAAAGTGACTAT  553717
```

3.1.173 NC_045512.2 SARS-Cov-2 10603-10617:

ACCTTTTGTTGACAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10600-10617
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  850      TGGACCTTTTGTTGACAG  867
                || ||||||||||||||
Sbjct  1818892  TGCACCTTTTGTTGACAG  1818909


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10603-10617
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  3        ACCTTTTGTTGACAG  17
                |||||||||||||||
Sbjct  1818895  ACCTTTTGTTGACAG  1818909
```

3.1.174 NC_045512.2 SARS-Cov-2 18628-18645:

TATTTTGTGAAAATAGGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18628-18645
Score = 29.2 bits (31),  Expect = 6.2
```

```
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  878      TATTTTGTGAAAATAGGA  895
                ||||||  ||||||||||
Sbjct  2121871  TATTTTTTGAAAATAGGA  2121888
```

3.1.175 NC_045512.2 SARS-Cov-2 17042-17064:

ATCAAAAGG–TTGGTATGCAAAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17042-17064
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 22/25 (88%), Gaps = 2/25 (8%)
 Strand=Plus/Plus
Query  292      ATCAAAAGG--TTGGTATGCAAAAG  314
                ||||||  ||  ||||||||||||||
Sbjct  1868347  ATCAAAGGGGTTTGGTATGCAAAAG  1868371
```

3.1.176 NC_045512.2 SARS-Cov-2 15117-15131:

TGTCTCTATCTGTAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15117-15131
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  367      TGTCTCTATCTGTAG  381
                |||||||||||||||
Sbjct  1375971  TGTCTCTATCTGTAG  1375985
```

3.1.177 NC_045512.2 SARS-Cov-2 5998-6017:

AATTGATCTTGTACCAAACC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5998-6017
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  248      AATTGATCTTGTACCAAACC  267
                ||||||||||||||||  ||
Sbjct  1082334  AATTGATCTTGTACCAATCC  1082315
```

3.1.178 NC_045512.2 SARS-Cov-2 13701-13720:

TAATTTACTTAAGGATTGTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13701-13720
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  951    TAATTTACTTAAGGATTGTC  970
              ||||||  ||||||||||||
Sbjct  39213  TAATTTGGTTAAGGATTGTC  39194
```

3.1.179 NC_045512.2 SARS-Cov-2 23986-24004:

TCCATCAAAACCAAGCAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23986-24004
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  236     TCCATCAAAACCAAGCAAG  254
               ||||||||||||||| |||
Sbjct  302499  TCCATCAAAACCAAGGAAG  302481
```

3.1.180 NC_045512.2 SARS-Cov-2 3945-3964:

AAGATGATAAGAAAATCAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3945-3964
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  195      AAGATGATAAGAAAATCAAA  214
                || |||| ||||||||||||
Sbjct  1091829  AACATGAAAAGAAAATCAAA  1091848
```

3.1.181 NC_045512.2 SARS-Cov-2 2297-2315:

TTCTTTAAGCTTGTAAATA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2297-2315
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  547     TTCTTTAAGCTTGTAAATA  565
                |||||| ||||||||||||
Sbjct  870607  TTCTTTTAGCTTGTAAATA  870625
```

3.1.182 NC_045512.2 SARS-Cov-2 12615-12634:

ACAATTCACCTAATTTAGCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12615-12634
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  865      ACAATTCACCTAATTTAGCA  884
                 ||||||||||||||  ||||
Sbjct  1290916  ACAATTCACCTAATGCAGCA  1290935
```

3.1.183 NC_045512.2 SARS-Cov-2 10651-10665:

TATTACAGTTAATGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10651-10665
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  901      TATTACAGTTAATGT  915
                 |||||||||||||||
Sbjct  1734590  TATTACAGTTAATGT  1734576
```

3.1.184 NC_045512.2 SARS-Cov-2 17828-17849:

AAACTGTTGATTCATCACAGGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17828-17849
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 20/22 (91%), Gaps = 0/22 (0%)
```

```
 Strand=Plus/Minus
Query  78       AAACTGTTGATTCATCACAGGG  99
                ||||||||||||| ||| |||
Sbjct  1566964  AAACTGTTGATTCAGCACCGGG  1566943
```

3.1.185 NC_045512.2 SARS-Cov-2 8750-8764:

AACAAACATGCTGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8750-8764
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  950     AACAAACATGCTGAT  964
               ||||||||||||||
Sbjct  716937  AACAAACATGCTGAT  716951
```

3.1.186 NC_045512.2 SARS-Cov-2 11035-11054:

ACTTTTAGTTTTAGTCCAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11035-11054
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  285      ACTTTTAGTTTTAGTCCAGA  304
                ||||||||||| | |||||
Sbjct  1553777  ACTTTTAGTTTTTGACCAGA  1553758
```

3.1.187 NC_045512.2 SARS-Cov-2 1623-1643:

TACTCCAAAAAGAGAAAGTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1623-1643
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  873     TACTCCAAAAAGAGAAAGTCA  893
               ||||||||||||| |||| ||
Sbjct  158992  TACTCCAAAAAGATAAAGACA  158972
```

3.1.188 NC_045512.2 SARS-Cov-2 1277-1296:

AAAGCCACTTGCGAATTTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1277-1296
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  527     AAAGCCACTTGCGAATTTTG  546
               |||||||||||||| || ||
Sbjct  843585  AAAGCCACTTGCGAGTTGTG  843566
```

3.1.189 NC_045512.2 SARS-Cov-2 12398-12417:

CTCAACAACATTATCAACAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12398-12417
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  648      CTCAACAACATTATCAACAA  667
               ||||| | ||||||||||||
Sbjct  1623823  CTCAATACCATTATCAACAA  1623842
```

3.1.190 NC_045512.2 SARS-Cov-2 2808-2827:

GGATTGATAAAGTACTTAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2807-2827
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  57       AGGATTGATAAAGTACTTAAT  77
               ||| | ||||||||||||||||
Sbjct  1300354  AGGGTGGATAAAGTACTTAAT  1300334


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2808-2827
Score = 28.3 bits (30),  Expect = 6.2
```

```
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  58       GGATTGATAAAGTACTTAAT  77
                ||| |||||||||| ||||
Sbjct  2091374  GGAGTGATAAAGTACGTAAT  2091355
```

3.1.191 NC_045512.2 SARS-Cov-2 16055-16072:

ATCCTAATCAGGAGTATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16055-16072
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  305      ATCCTAATCAGGAGTATG  322
                |||| ||||||||||||
Sbjct  1207707  ATCCAAATCAGGAGTATG  1207724
```

3.1.192 NC_045512.2 SARS-Cov-2 29844-29864:

ATTTTAATAGCTTCTTAGGAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29844-29864
Score = 25.6 bits (27),  Expect = 6.3
 Identities = 18/21 (86%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  44      ATTTTAATAGCTTCTTAGGAG  64
               ||||| ||  ||||||||||
Sbjct  710551  ATTTTCATCTCTTCTTAGGAG  710531
```

3.1.193 NC_045512.2 SARS-Cov-2 2574-2588:

CTAGTGAAGCTGTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2574-2588
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  824     CTAGTGAAGCTGTTG  838
               |||||||||||||||
Sbjct  605891  CTAGTGAAGCTGTTG  605905
```

3.1.194 NC_045512.2 SARS-Cov-2 29378-29397:

AAAAAGGACAAAAAGAAGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29378-29397
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  628     AAAAAGGACAAAAAGAAGAA  647
               || ||||||||||||||||
Sbjct  835709  AAGAAGGACAAAAAGAAGAA  835728
```

3.1.195 NC_045512.2 SARS-Cov-2 5824-5838:

TACAAAGTCCTCAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5824-5838
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  74      TACAAAGTCCTCAGA  88
               |||||||||||||||
Sbjct  453890  TACAAAGTCCTCAGA  453876
```

3.1.196 NC_045512.2 SARS-Cov-2 3181-3213:

AGAAGAGCAAGAAGAA-GATTGGTTAGATGATGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3181-3213
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 28/34 (82%), Gaps = 2/34 (6%)
 Strand=Plus/Minus
Query  431      AGAAGAGCAAGAAGAA-GATTGGTTAGATGATGA  463
                ||||||  |||| ||| ||  ||||||||||||
Sbjct  1922317  AGAAGAT-AAGATGAAAGAGAGGTTAGATGATGA  1922285
```

3.1.197 NC_045512.2 SARS-Cov-2 18453-18467:

TAAACCACCGCCTGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18453-18467
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  703     TAAACCACCGCCTGG  717
               ||||||||||||||
Sbjct  278774  TAAACCACCGCCTGG  278760
```

3.1.198 NC_045512.2 SARS-Cov-2 12881-12895:

TATACAGAACTGGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12881-12895
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  131      TATACAGAACTGGAA  145
                ||||||||||||||
Sbjct  1293919  TATACAGAACTGGAA  1293933
```

3.1.199 NC_045512.2 SARS-Cov-2 1258-1277:

GCAGACGGGCGATTTTGTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1258-1277
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  508      GCAGACGGGCGATTTTGTTA  527
                || || ||||||||||||||
Sbjct  1253416  GCTGATGGGCGATTTTGTTA  1253397
```

3.1.200 NC_045512.2 SARS-Cov-2 1123-1137:

AAGGGTTGAAAAGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1123-1137
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
```

```
 Strand=Plus/Minus
Query  373      AAGGGTTGAAAAGAA  387
                ||||||||||||||
Sbjct  1333945  AAGGGTTGAAAAGAA  1333931
```

3.1.201 NC_045512.2 SARS-Cov-2 24278-24292:

TTTAATGGTATTGGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24278-24292
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  528     TTTAATGGTATTGGA  542
               ||||||||||||||
Sbjct  899190  TTTAATGGTATTGGA  899204
```

3.1.202 NC_045512.2 SARS-Cov-2 6515-6532:

TTAAAAATTACAGAAGAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6515-6532
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  765      TTAAAAATTACAGAAGAG  782
                ||||| ||||||||||||
Sbjct  1678193  TTAAAGATTACAGAAGAG  1678176
```

3.1.203 NC_045512.2 SARS-Cov-2 16500-16518:

AGTTTTTGGTTTATATAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16500-16518
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  750     AGTTTTTGGTTTATATAAA  768
               ||||||| ||||||||||||
Sbjct  702872  AGTTTTTTGTTTATATAAA  702890
```

3.1.204 NC_045512.2 SARS-Cov-2 11141-11156:

ATGATGTTTGTCAAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11141-11156
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  391     ATGATGTTTGTCAAAC  406
               ||||||||||||||||
Sbjct  851116  ATGATGTTTGTCAAAC  851101
```

3.1.205 NC_045512.2 SARS-Cov-2 25921-25953:

AGTCCTATTTCTG—AACATGACTACCAGATTGGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25921-25953
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 29/36 (81%), Gaps = 3/36 (8%)
 Strand=Plus/Minus
Query  171      AGTCCTATTTCTG---AACATGACTACCAGATTGGT  203
               |||||| |||| |   || |||| ||||||||||||
Sbjct  1477441  AGTCCTTTTTCAGCCAAAAATGATTACCAGATTGGT  1477406
```

3.1.206 NC_045512.2 SARS-Cov-2 3677-3692:

TTTAATCAGCACGAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3677-3692
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  927     TTTAATCAGCACGAAG  942
               ||||||||||||||||
Sbjct  953903  TTTAATCAGCACGAAG  953918
```

3.1.207 NC_045512.2 SARS-Cov-2 11478-11495:

TCTCTGTTACTTCTAACT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11478-11495
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  728     TCTCTGTTACTTCTAACT  745
               |||| ||||||||||||
Sbjct  513585  TCTCAGTTACTTCTAACT  513568
```

3.1.208 NC_045512.2 SARS-Cov-2 25007-25032:

AAGGAGGAG-TTAGATAAATATTTTAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25007-25032
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 24/27 (89%), Gaps = 1/27 (4%)
 Strand=Plus/Plus
Query  257   AAGGAGGAG-TTAGATAAATATTTTAA  282
              ||||| ||| ||||||||||||| ||
Sbjct  8515  AAGGATGAGATTAGATAAATATTTAAA  8541
```

3.1.209 NC_045512.2 SARS-Cov-2 23069-23083:

GTTGGTTACCAACCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23069-23083
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  319      GTTGGTTACCAACCA  333
                |||||||||||||||
Sbjct  1430818  GTTGGTTACCAACCA  1430804
```

3.1.210 NC_045512.2 SARS-Cov-2 14859-14874:

TGAAGTTGTTGATAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14859-14874
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
```

```
 Strand=Plus/Minus
Query  109      TGAAGTTGTTGATAAG  124
                ||||||||||||||||
Sbjct  1303887  TGAAGTTGTTGATAAG  1303872


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14843-14874
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 26/32 (81%), Gaps = 2/32 (6%)
 Strand=Plus/Minus
Query  93       AACTACTATTTGTAGTTGAAGTTGTTGATAAG  124
                ||| || |||||   ||||| ||||||||||
Sbjct  1570829  AACAACAATTTGC--TTGAAATTGTTGATAAG  1570800
```

3.1.211 NC_045512.2 SARS-Cov-2 27336-27350:

TGAGAATAAATATTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27336-27350
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  986      TGAGAATAAATATTC  1000
                |||||||||||||||
Sbjct  2141078  TGAGAATAAATATTC  2141092
```

3.1.212 NC_045512.2 SARS-Cov-2 27753-27778:

AGAATGATTGAACTTTCATTAATTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27753-27778
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 22/26 (85%), Gaps = 0/26 (0%)
 Strand=Plus/Minus
Query  3        AGAATGATTGAACTTTCATTAATTGA  28
                |||||||||||||| |  | ||||||
Sbjct  1066094  AGAATGATTGAACTATAGTAAATTGA  1066069


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
```

```
Query = NC_045512.2 SARS-Cov-2  27750-27778
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 24/29 (83%), Gaps = 0/29 (0%)
 Strand=Plus/Minus
Query  950      GACAGAATGATTGAACTTTCATTAATTGA  978
                || |||||||||||||| |  | ||||||
Sbjct  1066097  GATAGAATGATTGAACTATAGTAAATTGA  1066069
```

3.1.213 NC_045512.2 SARS-Cov-2 12230-12246:

TCTGAATTTGACCGTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12230-12246
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 17/17 (100%), Gaps = 0/17 (0%)
 Strand=Plus/Minus
Query  480      TCTGAATTTGACCGTGA  496
                |||||||||||||||||
Sbjct  1808418  TCTGAATTTGACCGTGA  1808402
```

3.1.214 NC_045512.2 SARS-Cov-2 29532-29548:

AAACTCATGCAGACCAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29532-29548
Score = 27.4 bits (29),  Expect = 9.5
 Identities = 16/17 (94%), Gaps = 0/17 (0%)
 Strand=Plus/Minus
Query  82      AAACTCATGCAGACCAC  98
               |||||||||| |||||
Sbjct  701664  AAACTCATGCACACCAC  701648
```

3.1.215 NC_045512.2 SARS-Cov-2 11838-11861:

TACAGTCTAAAATGTCAGATGTAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11838-11861
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 22/24 (92%), Gaps = 1/24 (4%)
 Strand=Plus/Minus
Query  88      TACAGTCTAAAATGTCAGATGTAA  111
```

```
                ||||||||||||||| ||| |||
Sbjct  897475  TACAGTCTAAAATGTC-GATATAA  897453
```

3.1.216 NC_045512.2 SARS-Cov-2 24627-24647:

CTAATCTTGCTGCTACTAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24627-24647
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  877     CTAATCTTGCTGCTACTAAAA  897
                ||||||| | ||||||||||
Sbjct  116880  CTAATCTAGTTGCTACTAAAA  116900
```

3.1.217 NC_045512.2 SARS-Cov-2 1788-1817:

ATTTTAAAGTTACAAAAGGAAAAGCTAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1788-1817
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 24/30 (80%), Gaps = 0/30 (0%)
 Strand=Plus/Plus
Query  38      ATTTTAAAGTTACAAAAGGAAAAGCTAAAA  67
                ||| || |||||||||||| |||   |||||
Sbjct  267781  ATTCTATAGTTACAAAAGAAAATTTTAAAA  267810
```

3.1.218 NC_045512.2 SARS-Cov-2 15912-15937:

TGATTATGTGTA-CCTTCCTTACCCAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15912-15937
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 24/27 (89%), Gaps = 2/27 (7%)
 Strand=Plus/Minus
Query  162      TGATTATGTGTA-CCTTCCTTACCCAG  187
                 ||||| || ||| ||||||||||||||
Sbjct  1705313  TGATTTTG-GTATCCTTCCTTACCCAG  1705288
```

3.1.219 NC_045512.2 SARS-Cov-2 22073-22090:

GTCTCTCAGCCTTTTCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22073-22090
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  323     GTCTCTCAGCCTTTTCTT  340
               || ||||||||||||||
Sbjct  828261  GTTTCTCAGCCTTTTCTT  828244
```

3.1.220 NC_045512.2 SARS-Cov-2 5859-5874:

ATGTTTTCTACAAAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5859-5874
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  109      ATGTTTTCTACAAAGA  124
                ||||||||||||||||
Sbjct  1592533  ATGTTTTCTACAAAGA  1592518
```

3.1.221 NC_045512.2 SARS-Cov-2 17748-17763:

TGCTTGGAGAAAAGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17748-17763
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  948      TGCTTGGAGAAAAGCT  963
                ||||||||||||||||
Sbjct  1117360  TGCTTGGAGAAAAGCT  1117345
```

3.1.222 NC_045512.2 SARS-Cov-2 17008-17023:

ATCTCAGATGAGTTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17008-17023
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  258      ATCTCAGATGAGTTTT  273
                ||||||||||||||||
Sbjct  1066836  ATCTCAGATGAGTTTT  1066851


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17004-17023
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  254      CAATATCTCAGATGAGTTTT  273
                |||| ||| ||||||||||
Sbjct  1802666  CAATGTCTGAGATGAGTTTT  1802647
```

3.1.223 NC_045512.2 SARS-Cov-2 730-744:

AGATTTTCAAGAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  730-744
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  280     AGATTTTCAAGAAAA  294
                |||||||||||||||
Sbjct  399605  AGATTTTCAAGAAAA  399591
```

3.1.224 NC_045512.2 SARS-Cov-2 20407-20427:

TTTGAATTAGAAGATTTTATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20407-20427
Score = 34.6 bits (37),  Expect = 0.15
 Identities = 20/21 (95%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  657      TTTGAATTAGAAGATTTTATT  677
                ||||||||||||||| ||||
```

```
Sbjct  1925416  TTTGAATTAGAAGATTCTATT  1925396
```

3.1.225 NC_045512.2 SARS-Cov-2 22118-22137:

TTCAAAAATCTTAGGGAATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22118-22137
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  368     TTCAAAAATCTTAGGGAATT  387
               |||||||||||| |||| ||
Sbjct  943481  TTCAAAAATCTTGGGGATTT  943500
```

3.1.226 NC_045512.2 SARS-Cov-2 11848-11862:

AATGTCAGATGTAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11848-11862
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  98       AATGTCAGATGTAAA  112
                |||||||||||||||
Sbjct  2071545  AATGTCAGATGTAAA  2071531
```

3.1.227 NC_045512.2 SARS-Cov-2 29775-29791:

TAGGGAGAGCTGCCTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29775-29791
Score = 27.4 bits (29),  Expect = 2.9
 Identities = 16/17 (94%), Gaps = 0/17 (0%)
 Strand=Plus/Minus
Query  25       TAGGGAGAGCTGCCTAT  41
                |||||||||| |||||
Sbjct  2120766  TAGGGAGAGCTTCCTAT  2120750
```

3.1.228 NC_045512.2 SARS-Cov-2 21317-21339:

ATGGTTATGTCATGCATGCAAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21317-21339
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Plus
Query  567      ATGGTTATGTCATGCATGCAAAT  589
                ||||||||||||  ||| ||||
Sbjct  1276130  ATGGTTATGTCATCGATGAAAAT  1276152
```

3.1.229 NC_045512.2 SARS-Cov-2 9702-9721:

TTTGTATTTCCACAAAGCAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9702-9721
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  952      TTTGTATTTCCACAAAGCAT  971
                |||||||||||||| |||||
Sbjct  1807383  TTTGTATTTCCACATAGCAT  1807402
```

3.1.230 NC_045512.2 SARS-Cov-2 25078-25095:

TAATGCTTCAGTTGTAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25078-25095
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  328     TAATGCTTCAGTTGTAAA  345
                |||| ||||||||||||
Sbjct  726890  TAATTCTTCAGTTGTAAA  726873
```

3.1.231 NC_045512.2 SARS-Cov-2 19743-19762:

ATTGTTTGAAAATAAAACAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19743-19762
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  943    ATTGTTTGAAAATAAAACAA  962
              ||| | ||||||||||||||
Sbjct  78639  ATTTTGTGAAAATAAAACAA  78620
```

3.1.232 NC_045512.2 SARS-Cov-2 8160-8193:

CTTTTATTTCAGCAGCTCGGCAAGGGTTTGTTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8160-8193
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 27/34 (79%), Gaps = 0/34 (0%)
 Strand=Plus/Plus
Query  410     CTTTTATTTCAGCAGCTCGGCAAGGGTTTGTTGA  443
                |||||||||||||| ||  | ||| | ||| |||
Sbjct  721659  CTTTTATTTCAGCAACTATGAAAGAGATTGATGA  721692
```

3.1.233 NC_045512.2 SARS-Cov-2 22803-22817:

AAACTGGAAAGATTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22803-22817
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  53       AAACTGGAAAGATTG  67
                ||||||||||||||
Sbjct  1826775  AAACTGGAAAGATTG  1826789
```

3.1.234 NC_045512.2 SARS-Cov-2 15154-15174:

CATCAAA–AATTATTGAAATCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15154-15174
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 21/23 (91%), Gaps = 2/23 (9%)
```

```
 Strand=Plus/Plus
Query  404      CATCAAA--AATTATTGAAATCA  424
                |||||||  ||||||||||||||
Sbjct  1859587  CATCAAAGTAATTATTGAAATCA  1859609
```

3.1.235 NC_045512.2 SARS-Cov-2 22392-22409:

TAAAATATAATGAAAATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22392-22409
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  642      TAAAATATAATGAAAATG  659
                |||||||||| ||||||
Sbjct  1834675  TAAAATATAATAAAAATG  1834658
```

3.1.236 NC_045512.2 SARS-Cov-2 9811-9830:

CTTTTTGTTAAATAAAGAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9811-9830
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  61       CTTTTTGTTAAATAAAGAAA  80
                || ||||||||||||||||
Sbjct  1107134  CTATTTGTTAAATAAAGAAA  1107153
```

3.1.237 NC_045512.2 SARS-Cov-2 313-327:

CAGTTTGCCTGTTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  313-327
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  263      CAGTTTGCCTGTTTT  277
                |||||||||||||||
Sbjct  1237363  CAGTTTGCCTGTTTT  1237349
```

3.1.238 NC_045512.2 SARS-Cov-2 1578-1593:

TTGTTGGAGAAGGTTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1578-1593
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  828      TTGTTGGAGAAGGTTC  843
                ||||||||||||||||
Sbjct  1152805  TTGTTGGAGAAGGTTC  1152820


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1576-1593
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  826     TGTTGTTGGAGAAGGTTC  843
                |||||||||| ||||||
Sbjct  480797  TGTTGTTGGAGCAGGTTC  480814
```

3.1.239 NC_045512.2 SARS-Cov-2 513-531:

ATGTTATGGTTGAGCTGGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  513-531
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  63      ATGTTATGGTTGAGCTGGT  81
               ||||||||||| ||||||
Sbjct  388324  ATGTTATGGTTGTGCTGGT  388342
```

3.1.240 NC_045512.2 SARS-Cov-2 6707-6725:

AAAGTTGTTAGTACAACTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6707-6725
Score = 31.0 bits (33),  Expect = 1.8
```

```
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  957      AAAGTTGTTAGTACAACTA  975
                ||||||||||||| |||||
Sbjct  1106976  AAAGTTGTTAGTATAACTA  1106958
```

3.1.241 NC_045512.2 SARS-Cov-2 26201-26216:

CTACTAGCGTGCCTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26201-26216
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  451     CTACTAGCGTGCCTTT  466
               ||||||||||||||||
Sbjct  222382  CTACTAGCGTGCCTTT  222367
```

3.1.242 NC_045512.2 SARS-Cov-2 3258-3282:

AGACAACTACTATTCAAACAATTGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3258-3282
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Plus
Query  508     AGACAACTACTATTCAAACAATTGT  532
               |||| ||||||||||  ||| |||
Sbjct  909564  AGACGACTACTATTCACCCAAATGT  909588
```

3.1.243 NC_045512.2 SARS-Cov-2 29821-29836:

TTTAGTAGTGCTATCC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29821-29836
Score = 25.6 bits (27),  Expect = 6.3
 Identities = 15/16 (94%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  21      TTTAGTAGTGCTATCC  36
               |||||||||||| |||
Sbjct  602440  TTTAGTAGTGCTGTCC  602455
```

3.1.244 NC_045512.2 SARS-Cov-2 26096-26115:

AAATTGTTGATGAGCCTGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26096-26115
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 19/20 (95%), Gaps = 1/20 (5%)
 Strand=Plus/Minus
Query  346     AAATTGTTGATGAGCCTGAA  365
               |||||||||||||| |||||
Sbjct  206183  AAATTGTTGATGAG-CTGAA  206165
```

3.1.245 NC_045512.2 SARS-Cov-2 10067-10081:

AAAATGGCATTCCCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10067-10081
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  317      AAAATGGCATTCCCA  331
               |||||||||||||||
Sbjct  1571729  AAAATGGCATTCCCA  1571743
```

3.1.246 NC_045512.2 SARS-Cov-2 2236-2250:

TGAAATTGTCGGTGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2236-2250
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  486      TGAAATTGTCGGTGG  500
               |||||||||||||||
Sbjct  1090534  TGAAATTGTCGGTGG  1090548
```

3.1.247 NC_045512.2 SARS-Cov-2 9784-9801:

TACTTTTGAAGAAGCTGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9784-9801
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  34       TACTTTTGAAGAAGCTGC  51
                || ||||||||||||||
Sbjct  1203908  TATTTTTGAAGAAGCTGC  1203891
```

3.1.248 NC_045512.2 SARS-Cov-2 27257-27274:

TGAGGACTTTTAAAGTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27257-27274
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  507      TGAGGACTTTTAAAGTTT  524
                |||||||||||||| ||
Sbjct  1834149  TGAGGACTTTTAAAGCTT  1834132
```

3.1.249 NC_045512.2 SARS-Cov-2 29698-29717:

TTAGGGAGGACTTGAAAGAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29698-29717
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  948      TTAGGGAGGACTTGAAAGAG  967
                ||| | ||||||||||||||
Sbjct  1129481  TTATGAAGGACTTGAAAGAG  1129462
```

3.1.250 NC_045512.2 SARS-Cov-2 5104-5119:

TGAAGGTAAAACATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5104-5119
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
```

```
 Strand=Plus/Plus
Query  354     TGAAGGTAAAACATTT  369
                ||||||||||||||||
Sbjct  726617  TGAAGGTAAAACATTT  726632
```

3.1.251 NC_045512.2 SARS-Cov-2 29306-29325:

AATTTCAAAGATCAAGTCAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29306-29325
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  556     AATTTCAAAGATCAAGTCAT  575
                |||||||||| ||||||||
Sbjct  676371  AATTTCAAAGAGCAAGTCAT  676352
```

3.1.252 NC_045512.2 SARS-Cov-2 3168-3185:

CTCTTCAACCTGAAGAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3168-3185
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  418     CTCTTCAACCTGAAGAAG  435
                ||||| ||||||||||||
Sbjct  167792  CTCTTAAACCTGAAGAAG  167775
```

3.1.253 NC_045512.2 SARS-Cov-2 17820-17839:

ACCAACTCAAACTGTTGATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17820-17839
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  70       ACCAACTCAAACTGTTGATT  89
                ||||||||||||||  ||||
Sbjct  1694512  ACCAACTCAAACTGACGATT  1694531
```

3.1.254 NC_045512.2 SARS-Cov-2 21818-21837:

TTTAATGATGGTGTTTATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21818-21837
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  68       TTTAATGATGGTGTTTATTT  87
                ||||  ||||||||||| |||
Sbjct  1712903  TTTATTGATGGTGTTTTTTT  1712884
```

3.1.255 NC_045512.2 SARS-Cov-2 4042-4064:

TAATGGCAATCTTCATCCAGATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4042-4064
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Minus
Query  292     TAATGGCAATCTTCATCCAGATT  314
                || ||| || ||||||||||||
Sbjct  934350  TATTGGAAACCTTCATCCAGATT  934328
```

3.1.256 NC_045512.2 SARS-Cov-2 8697-8714:

CTATTGATGGTGGTGTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8697-8714
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  947      CTATTGATGGTGGTGTCA  964
                || ||||||||||||||
Sbjct  1228205  CTTTTGATGGTGGTGTCA  1228188
```

3.1.257 NC_045512.2 SARS-Cov-2 1605-1627:

ATGACAACCTTCTTGAAATACTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1605-1627
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Plus
Query  855     ATGACAACCTTCTTGAAATACTC  877
                |||||||||||  ||  |||  ||||
Sbjct  903223  ATGACAACCTTTTTCAAAAACTC  903245
```

3.1.258 NC_045512.2 SARS-Cov-2 22957-22979:

GAGAGATATTTCAA—CTGAAATCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22957-22979
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 22/26 (85%), Gaps = 3/26 (12%)
 Strand=Plus/Plus
Query  207      GAGAGATATTTCAA---CTGAAATCT  229
                |||||||||||||   ||||||  ||
Sbjct  1568314  GAGAGATATTTCAAAATCTGAAAACT  1568339
```

3.1.259 NC_045512.2 SARS-Cov-2 17258-17275:

AGTGTTTTGATAAATTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17258-17275
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  508      AGTGTTTTGATAAATTCA  525
                || ||||||||||||||
Sbjct  1317358  AGGGTTTTGATAAATTCA  1317375
```

3.1.260 NC_045512.2 SARS-Cov-2 23986-24000:

TCCATCAAAACCAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23986-24000
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
```

```
 Strand=Plus/Minus
Query  986     TCCATCAAAACCAAG  1000
               ||||||||||||||
Sbjct  302499  TCCATCAAAACCAAG  302485
```

3.1.261 NC_045512.2 SARS-Cov-2 14587-14612:

GCTTCTGGTAATCTATTACTAGATAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14587-14612
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 22/26 (85%), Gaps = 0/26 (0%)
 Strand=Plus/Plus
Query  837     GCTTCTGGTAATCTATTACTAGATAA  862
               || |||||||||||| | |||| ||
Sbjct  269358  GCCTCTGGTAATCTATCATTAGAAAA  269383
```

3.1.262 NC_045512.2 SARS-Cov-2 16971-16985:

CTATGTTAGAATTAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16971-16985
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  221      CTATGTTAGAATTAC  235
                ||||||||||||||
Sbjct  1425413  CTATGTTAGAATTAC  1425399
```

3.1.263 NC_045512.2 SARS-Cov-2 28018-28032:

ATTCTAAATGGTATA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28018-28032
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  268      ATTCTAAATGGTATA  282
                ||||||||||||||
Sbjct  1740216  ATTCTAAATGGTATA  1740202
```

3.1.264 NC_045512.2 SARS-Cov-2 13202-13220:

GAAGCCAATATGGATCAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13202-13220
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  452      GAAGCCAATATGGATCAAG  470
                ||||||| ||||||||||
Sbjct  1007534  GAAGCCATTATGGATCAAG  1007552
```

3.1.265 NC_045512.2 SARS-Cov-2 12835-12850:

TTTGAAATGGGCTAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12835-12850
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  85       TTTGAAATGGGCTAGA  100
                ||||||||||||||||
Sbjct  1331434  TTTGAAATGGGCTAGA  1331419
```

3.1.266 NC_045512.2 SARS-Cov-2 23323-23337:

TACACCATGTTCTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23323-23337
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  573      TACACCATGTTCTTT  587
                |||||||||||||||
Sbjct  1458220  TACACCATGTTCTTT  1458234
```

3.1.267 NC_045512.2 SARS-Cov-2 19561-19575:

TTGTGGGTTTACAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19561-19575
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  811     TTGTGGGTTTACAAA  825
               ||||||||||||||
Sbjct  314870  TTGTGGGTTTACAAA  314856
```

3.1.268 NC_045512.2 SARS-Cov-2 27023-27038:

AATCACTGTTGCTACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27023-27038
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  273     AATCACTGTTGCTACA  288
               ||||||||||||||||
Sbjct  105568  AATCACTGTTGCTACA  105553
```

3.1.269 NC_045512.2 SARS-Cov-2 6414-6428:

AAGTAGTGGAAAATC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6414-6428
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  664     AAGTAGTGGAAAATC  678
               ||||||||||||||
Sbjct  793974  AAGTAGTGGAAAATC  793988
```

3.1.270 NC_045512.2 SARS-Cov-2 25089-25108:

TTGTAAACATTCAAAAAGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25089-25108
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Plus
Query  339      TTGTAAACATTCAAAAAGAA  358
                ||||  ||||||||||||||
Sbjct  1513803  TTGTTCACATTCAAAAAGAA  1513822
```

3.1.271 NC_045512.2 SARS-Cov-2 16501-16518:

GTTTTTGGTTTATATAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16500-16518
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  750     AGTTTTTGGTTTATATAAA  768
               ||||||| ||||||||||||
Sbjct  702872  AGTTTTTTGTTTATATAAA  702890


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16501-16518
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  1       GTTTTTGGTTTATATAAA  18
               |||||| ||||||||||||
Sbjct  702873  GTTTTTTGTTTATATAAA  702890
```

3.1.272 NC_045512.2 SARS-Cov-2 6951-6966:

TTATAATTTGGTTTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6951-6966
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  201      TTATAATTTGGTTTTT  216
                ||||||||||||||||
Sbjct  1691851  TTATAATTTGGTTTTT  1691866
```

3.1.273 NC_045512.2 SARS-Cov-2 23996-24010:

CCAAGCAAGAGGTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23996-24010
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  246     CCAAGCAAGAGGTCA  260
               ||||||||||||||
Sbjct  351621  CCAAGCAAGAGGTCA  351635
```

3.1.274 NC_045512.2 SARS-Cov-2 23618-23648:

AGTGTAGCTAGTCAATCCATCATTGCCTACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23618-23648
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 25/31 (81%), Gaps = 3/31 (10%)
 Strand=Plus/Minus
Query  868     AGTGTAGCTAGTCAATCCATCATTGCCTACA  898
               ||||||   |||||||||||| |||  ||||
Sbjct  380858  AGTGTA---AGTCAATCCATCCTTGGATACA  380831
```

3.1.275 NC_045512.2 SARS-Cov-2 16537-16555:

GATAATGTTACTGACTTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16537-16555
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  787     GATAATGTTACTGACTTTA  805
               |||||| ||||||||||||
Sbjct  721757  GATAATATTACTGACTTTA  721775
```

3.1.276 NC_045512.2 SARS-Cov-2 881-908:

GCACGTGCTGGTAAAGCTTCATGCACTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  881-908
Score = 34.6 bits (37),  Expect = 0.15
 Identities = 25/28 (89%), Gaps = 1/28 (4%)
 Strand=Plus/Minus
Query  131      GCACGTGCTGGTAAAGCTTCATGCACTT  158
                || |||||| |||||||||||| ||||||
Sbjct  2006821  GCTCGTGCTCGTAAAGCTTCA-GCACTT  2006795
```

3.1.277 NC_045512.2 SARS-Cov-2 19119-19136:

TTATAAAATAGAAGAATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19119-19136
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  369      TTATAAAATAGAAGAATT  386
                || ||||||||||||||
Sbjct  1888879  TTTTAAAATAGAAGAATT  1888862
```

3.1.278 NC_045512.2 SARS-Cov-2 29786-29799:

GCCTATATGGAAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29786-29799
Score = 26.5 bits (28),  Expect = 2.9
 Identities = 14/14 (100%), Gaps = 0/14 (0%)
 Strand=Plus/Plus
Query  36      GCCTATATGGAAGA  49
               ||||||||||||||
Sbjct  437409  GCCTATATGGAAGA  437422
```

3.1.279 NC_045512.2 SARS-Cov-2 5915-5931:

TTGGATGGTGTTGTTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5915-5931
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 17/17 (100%), Gaps = 0/17 (0%)
```

```
 Strand=Plus/Plus
Query  165     TTGGATGGTGTTGTTTG  181
                |||||||||||||||||
Sbjct  691171  TTGGATGGTGTTGTTTG  691187
```

3.1.280 NC_045512.2 SARS-Cov-2 25399-25427:

TTGTTTATGAGAATCTTCACAA–TTGGAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25399-25427
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 26/31 (84%), Gaps = 2/31 (6%)
 Strand=Plus/Plus
Query  649     TTGTTTATGAGAATCTTCACAA--TTGGAAC  677
                |||||||||||| || ||| |||  |||||||
Sbjct  935084  TTGTTTATGAGGATGTTCGCAAGTTTGGAAC  935114
```

3.1.281 NC_045512.2 SARS-Cov-2 16528-16550:

GTTGGTAGCGATAATGTTACTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16528-16550
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Minus
Query  978      GTTGGTAGCGATAATGTTACTGA  1000
                 |||||||||||| | |||| ||||
Sbjct  1498616  GTTGGTAGCGAAATTGTTTCTGA  1498594
```

3.1.282 NC_045512.2 SARS-Cov-2 19820-19844:

CAGAGGTGAAAATACTCAATAATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19820-19844
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Plus
Query  70      CAGAGGTGAAAATACTCAATAATTT  94
                || ||||||||||  ||| |||||
Sbjct  493241  CAAAGGTGAAAATAGACAAGAATTT  493265
```

3.1.283 NC_045512.2 SARS-Cov-2 28847-28865:

AACAGTTCAAGAAATTCAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28847-28865
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  97       AACAGTTCAAGAAATTCAA  115
                |||||||||||||| ||||
Sbjct  1586605  AACAGTTCAAGAAAGTCAA  1586587
```

3.1.284 NC_045512.2 SARS-Cov-2 1881-1895:

AGGCTGCTCGTGTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1881-1895
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  131    AGGCTGCTCGTGTTG  145
              |||||||||||||||
Sbjct  21973  AGGCTGCTCGTGTTG  21987
```

3.1.285 NC_045512.2 SARS-Cov-2 20251-20265:

ATTGATTTCTTAGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20251-20265
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  501     ATTGATTTCTTAGAA  515
               |||||||||||||||
Sbjct  278293  ATTGATTTCTTAGAA  278307
```

3.1.286 NC_045512.2 SARS-Cov-2 23120-23134:

GCACCAGCAACTGTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23120-23134
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  370      GCACCAGCAACTGTT  384
                ||||||||||||||
Sbjct  1974294  GCACCAGCAACTGTT  1974308
```

3.1.287 NC_045512.2 SARS-Cov-2 15804-15821:

TCAAAACAATGTTTTTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15804-15821
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  54       TCAAAACAATGTTTTTAT  71
                ||||||||||||||| ||
Sbjct  1690427  TCAAAACAATGTTTTGAT  1690410
```

3.1.288 NC_045512.2 SARS-Cov-2 29718-29731:

CCACCACATTTTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29718-29731
Score = 26.5 bits (28),  Expect = 9.5
 Identities = 14/14 (100%), Gaps = 0/14 (0%)
 Strand=Plus/Minus
Query  268     CCACCACATTTTCA  281
               ||||||||||||||
Sbjct  933667  CCACCACATTTTCA  933654
```

3.1.289 NC_045512.2 SARS-Cov-2 11135-11150:

TTTGCAATGATGTTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11135-11150
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
```

```
 Strand=Plus/Minus
Query  385      TTTGCAATGATGTTTG  400
                 ||||||||||||||||
Sbjct  2129864  TTTGCAATGATGTTTG  2129849
```

3.1.290 NC_045512.2 SARS-Cov-2 15733-15750:

TGTTTCAATAGCACTTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15733-15750
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  983     TGTTTCAATAGCACTTAT  1000
                |||||||||||| ||||
Sbjct  971150  TGTTTCAATAGCATTTAT  971167
```

3.1.291 NC_045512.2 SARS-Cov-2 3016-3036:

TTCACATATGTATTGTTCTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3016-3036
Score = 34.6 bits (37),  Expect = 0.15
 Identities = 20/21 (95%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  266     TTCACATATGTATTGTTCTTT  286
                ||||||||| ||||||||||
Sbjct  693726  TTCACATATATATTGTTCTTT  693746
```

3.1.292 NC_045512.2 SARS-Cov-2 19120-19135:

TATAAAATAGAAGAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19120-19135
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  370      TATAAAATAGAAGAAT  385
                 ||||||||||||||||
Sbjct  1030042  TATAAAATAGAAGAAT  1030027
```

3.1.293 NC_045512.2 SARS-Cov-2 8471-8490:

AATAACTTACCTTTTAAGTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8471-8490
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  721      AATAACTTACCTTTTAAGTT  740
                |||||  | ||||||||||||
Sbjct  1526911  AATAAGTGACCTTTTAAGTT  1526930
```

3.1.294 NC_045512.2 SARS-Cov-2 9612-9626:

TTACTAATGATGTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9612-9626
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  862      TTACTAATGATGTTT  876
                |||||||||||||||
Sbjct  1209801  TTACTAATGATGTTT  1209815
```

3.1.295 NC_045512.2 SARS-Cov-2 11683-11702:

GACTCTTGGTGTTTATGATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11683-11702
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  933      GACTCTTGGTGTTTATGATT  952
                ||||||||||||  ||||||
Sbjct  1859908  GACTCTTGGTGTGAATGATT  1859927
```

3.1.296 NC_045512.2 SARS-Cov-2 29110-29129:

AGAACAAACCCAAGGAAATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29110-29129
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  360     AGAACAAACCCAAGGAAATT  379
                ||| |||| ||||||||||
Sbjct  921945  AGACCAAAGCCAAGGAAATT  921926
```

3.1.297 NC_045512.2 SARS-Cov-2 17264-17278:

TTGATAAATTCAAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17264-17278
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  514      TTGATAAATTCAAAG  528
                |||||||||||||||
Sbjct  2009184  TTGATAAATTCAAAG  2009170
```

3.1.298 NC_045512.2 SARS-Cov-2 19125-19144:

AATAGAAGAATTATTCTATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19125-19144
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  375   AATAGAAGAATTATTCTATT  394
              |||| |||||||||| |||
Sbjct  8816  AATAAAAGAATTATTCAATT  8797
```

3.1.299 NC_045512.2 SARS-Cov-2 15622-15641:

TATGAGTGTCTCTATAGAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15622-15641
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Plus
Query  872     TATGAGTGTCTCTATAGAAA  891
                ||||| |||||||||||  ||
Sbjct  178856  TATGAATGTCTCTATAGGAA  178875
```

3.1.300 NC_045512.2 SARS-Cov-2 13687-13701:

GAAGAAACAATTTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13681-13701
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  931      CAACATGAAGAAACAATTTAT  951
                 || |||||| ||||||||||
Sbjct  2131483  CATCATGAAAAAACAATTTAT  2131503


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13687-13701
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  937     GAAGAAACAATTTAT  951
                |||||||||||||||
Sbjct  374060  GAAGAAACAATTTAT  374074
```

3.1.301 NC_045512.2 SARS-Cov-2 10054-10071:

GAGTGGTTTTAGAAAAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10054-10071
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  304      GAGTGGTTTTAGAAAAAT  321
                 ||||| ||||||||||||
Sbjct  1393992  GAGTGATTTTAGAAAAAT  1394009
```

3.1.302 NC_045512.2 SARS-Cov-2 19933-19948:

ACTGACATAGCCAAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19933-19948
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  183     ACTGACATAGCCAAGA  198
               ||||||||||||||||
Sbjct  185052  ACTGACATAGCCAAGA  185037
```

3.1.303 NC_045512.2 SARS-Cov-2 10110-10127:

AAGTAACTTGTGGTACAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10110-10127
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  360      AAGTAACTTGTGGTACAA  377
                ||||||||||||||||||
Sbjct  1658597  AAGTAATTTGTGGTACAA  1658580
```

3.1.304 NC_045512.2 SARS-Cov-2 22145-22180:

AAGAATATTGATG-GTTATTTTAAAATATATTCTAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22145-22180
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 30/37 (81%), Gaps = 1/37 (3%)
 Strand=Plus/Minus
Query  395      AAGAATATTGATG-GTTATTTTAAAATATATTCTAAG  430
                ||||||||||||  ||| ||||||||||||||||||
Sbjct  1807011  AAGAATTTTGACATGTTCTTTTAAAATATAGTCCAAG  1806975
```

3.1.305 NC_045512.2 SARS-Cov-2 25945-25964:

CAGATTGGTGGTTATACTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25945-25964
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  195      CAGATTGGTGGTTATACTGA  214
                || ||||||||||||| |||
Sbjct  1318698  CAAATTGGTGGTTATAGTGA  1318679
```

3.1.306 NC_045512.2 SARS-Cov-2 880-897:

AGCACGTGCTGGTAAAGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  880-897
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  130      AGCACGTGCTGGTAAAGC  147
                ||||| ||||||||||||
Sbjct  1466699  AGCACTTGCTGGTAAAGC  1466716
```

3.1.307 NC_045512.2 SARS-Cov-2 24673-24687:

AAAAAGAGTTGATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24673-24687
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  923     AAAAAGAGTTGATTT  937
               |||||||||||||||
Sbjct  606373  AAAAAGAGTTGATTT  606359
```

3.1.308 NC_045512.2 SARS-Cov-2 3804-3825:

AAAATCTCTATGACAAACTTGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3804-3825
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 20/22 (91%), Gaps = 0/22 (0%)
```

```
 Strand=Plus/Plus
Query  54       AAAATCTCTATGACAAACTTGT  75
                 ||||||||||||| ||||| ||
Sbjct  1071730  AAAATCTCTATGAGAAACTGGT  1071751
```

3.1.309 NC_045512.2 SARS-Cov-2 584-598:

CTTGTCCCTCATGTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  584-598
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  134      CTTGTCCCTCATGTG  148
                 |||||||||||||||
Sbjct  2112181  CTTGTCCCTCATGTG  2112195
```

3.1.310 NC_045512.2 SARS-Cov-2 13884-13906:

ATACAATTGTTGTGATGATGATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13884-13906
Score = 33.7 bits (36),  Expect = 0.15
 Identities = 21/23 (91%), Gaps = 0/23 (0%)
 Strand=Plus/Minus
Query  134      ATACAATTGTTGTGATGATGATT  156
                 |||||||||||| ||||||| |||
Sbjct  1733187  ATACAATTGTTCTGATGATTATT  1733165
```

3.1.311 NC_045512.2 SARS-Cov-2 4768-4782:

TATTGAAACCATCTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4768-4782
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  18       TATTGAAACCATCTC  32
                 |||||||||||||||
Sbjct  1044979  TATTGAAACCATCTC  1044993
```

3.1.312 NC_045512.2 SARS-Cov-2 16884-16902:

TTACAAATTAAATGTTGGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16884-16902
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  134     TTACAAATTAAATGTTGGT  152
               ||| ||||||||||||||
Sbjct  369856  TTAAAAATTAAATGTTGGT  369874
```

3.1.313 NC_045512.2 SARS-Cov-2 24353-24369:

ATTGGCAAAATTCAAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24353-24369
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 17/17 (100%), Gaps = 0/17 (0%)
 Strand=Plus/Minus
Query  603     ATTGGCAAAATTCAAGA  619
               |||||||||||||||||
Sbjct  527277  ATTGGCAAAATTCAAGA  527261
```

3.1.314 NC_045512.2 SARS-Cov-2 15143-15167:

ATAGACAGTTTCATCAAAAATTATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15143-15167
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 22/25 (88%), Gaps = 1/25 (4%)
 Strand=Plus/Minus
Query  393     ATAGACAGTTTCATCAAAAATTATT  417
               ||||| | ||||||| |||||||||
Sbjct  569967  ATAGATAATTTCATC-AAAATTATT  569944
```

3.1.315 NC_045512.2 SARS-Cov-2 2299-2316:

CTTTAAGCTTGTAAATAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2299-2316
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  549      CTTTAAGCTTGTAAATAA  566
                ||||||||||||| |||
Sbjct  1370469  CTTTAAGCTTGTAACTAA  1370452
```

3.1.316 NC_045512.2 SARS-Cov-2 17336-17356:

CAGCAGATATAGTTGTCTTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17336-17356
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  586     CAGCAGATATAGTTGTCTTTG  606
                ||| ||||| ||||||||||
Sbjct  848888  CAGAAGATACAGTTGTCTTTG  848908
```

3.1.317 NC_045512.2 SARS-Cov-2 7828-7852:

TGTTAACTTAGACAACCTGAGAGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7828-7852
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Minus
Query  78      TGTTAACTTAGACAACCTGAGAGCT  102
               || || ||||||||||||  ||||
Sbjct  734347  TGGTAGCTTAGACAACCTGCTAGCT  734323
```

3.1.318 NC_045512.2 SARS-Cov-2 1576-1590:

TGTTGTTGGAGAAGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1576-1590
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
```

```
 Strand=Plus/Plus
Query  826      TGTTGTTGGAGAAGG  840
                ||||||||||||||
Sbjct  1062494  TGTTGTTGGAGAAGG  1062508
```

3.1.319 NC_045512.2 SARS-Cov-2 26424-26451:

TCGTGTTAAAAATCTGAATTCTTCTAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26424-26451
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 24/28 (86%), Gaps = 1/28 (4%)
 Strand=Plus/Plus
Query  674     TCGTGTTAAAAATCTGAATTCTTCTAGA  701
               |||||||||||||| | ||  |||||||
Sbjct  697914  TCGTGTTAAAAATC-GTATGATTCTAGA  697940
```

3.1.320 NC_045512.2 SARS-Cov-2 23389-23407:

TGTTCTTTATCAGGATGTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23389-23407
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  639      TGTTCTTTATCAGGATGTT  657
                |||| ||||||||||||||
Sbjct  2039039  TGTTTTTTATCAGGATGTT  2039021
```

3.1.321 NC_045512.2 SARS-Cov-2 26643-26664:

AACAGGAATAGGTTTTTGTATA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26643-26664
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 20/22 (91%), Gaps = 1/22 (5%)
 Strand=Plus/Minus
Query  893      AACAGGAATAGGTTTTTGTATA  914
                |||||  |||||||||||| ||
Sbjct  1381994  AACAG-AATAGGTTTTTGTGTA  1381974
```

3.1.322 NC_045512.2 SARS-Cov-2 1128-1148:

TTGAAAAGAAAAAGCTTGATG

```
> NZ_CP020550.1 Streptococcus pneumoniae strain Hu17 plasmid pSpn_Hu17
Length=6012
Query = NC_045512.2 SARS-Cov-2  1128-1148
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  378   TTGAAAAGAAAAAGCTTGATG  398
              |||||||||||||||  ||||
Sbjct  2782  TTGAAAAGAAAAAGCAAGATG  2802
```

3.1.323 NC_045512.2 SARS-Cov-2 12855-12872:

CTAAGAGTGATGGAACTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12855-12872
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  105      CTAAGAGTGATGGAACTG  122
                 ||||||||||||||||||
Sbjct  1198112  CTAAGATTGATGGAACTG  1198095
```

3.1.324 NC_045512.2 SARS-Cov-2 2110-2128:

CATCTTTGGCACTGTTTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2110-2128
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  360     CATCTTTGGCACTGTTTAT  378
                ||||||||||||||| |||
Sbjct  585020  CATCTTTGGCACTGTCTAT  585038
```

3.1.325 NC_045512.2 SARS-Cov-2 13153-13168:

GATGTTGTGTACACAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13153-13168
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  403     GATGTTGTGTACACAC  418
               ||||||||||||||||
Sbjct  665855  GATGTTGTGTACACAC  665870
```

3.1.326 NC_045512.2 SARS-Cov-2 4867-4881:

TGTATATTACACTAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4867-4881
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  117      TGTATATTACACTAG  131
                ||||||||||||||
Sbjct  1968735  TGTATATTACACTAG  1968749
```

3.1.327 NC_045512.2 SARS-Cov-2 21720-21742:

ACTTGTTCTTACCTTTCTTTTCC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21720-21742
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Minus
Query  970     ACTTGTTCTTACCTTTCTTTTCC  992
               || ||||| || ||||||||||
Sbjct  240861  ACCTGTTCATAGCTTTCTTTTCC  240839
```

3.1.328 NC_045512.2 SARS-Cov-2 4090-4104:

CATCACTTTCTTAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4090-4104
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
```

```
 Strand=Plus/Plus
Query  340      CATCACTTTCTTAAA  354
                ||||||||||||||
Sbjct  1392819  CATCACTTTCTTAAA  1392833
```

3.1.329 NC_045512.2 SARS-Cov-2 26166-26180:

AGTAATGGAACCAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26166-26180
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  416      AGTAATGGAACCAAT  430
                ||||||||||||||
Sbjct  2111533  AGTAATGGAACCAAT  2111547
```

3.1.330 NC_045512.2 SARS-Cov-2 24475-24503:

TGCAATTTCAAGTGTTTTAAATGATATCC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24475-24503
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 24/29 (83%), Gaps = 0/29 (0%)
 Strand=Plus/Minus
Query  725     TGCAATTTCAAGTGTTTTAAATGATATCC  753
                ||||||||||  |||| || |||| |||
Sbjct  820987  TGCAATTTCAACGGTTTCAATTGATTTCC  820959
```

3.1.331 NC_045512.2 SARS-Cov-2 29529-29542:

CCTAAACTCATGCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29529-29542
Score = 26.5 bits (28),  Expect = 9.5
 Identities = 14/14 (100%), Gaps = 0/14 (0%)
 Strand=Plus/Minus
Query  79      CCTAAACTCATGCA  92
               ||||||||||||||
Sbjct  692861  CCTAAACTCATGCA  692848
```

3.1.332 NC_045512.2 SARS-Cov-2 15411-15442:

TGAGTGTGCTCAAGTATTGAGTGAAATGGTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15411-15442
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 26/32 (81%), Gaps = 0/32 (0%)
 Strand=Plus/Minus
Query  661     TGAGTGTGCTCAAGTATTGAGTGAAATGGTCA  692
               ||||||||| |||| |   | ||||||||||
Sbjct  203740  TGAGTGTGCACAAGGAGCTATTGAAATGGTCA  203709
```

3.1.333 NC_045512.2 SARS-Cov-2 4352-4374:

GAGAAGCAAGAAATTCTTGGAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4352-4374
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 21/23 (91%), Gaps = 1/23 (4%)
 Strand=Plus/Plus
Query  602     GAGAAGCAAGAAATTCTTGGAAC  624
               ||||||||||||| || ||||||
Sbjct  190189  GAGAAGCAAGAAA-TCGTGGAAC  190210
```

3.1.334 NC_045512.2 SARS-Cov-2 7246-7266:

GTTTTTGGCATATATTCTTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7246-7266
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  496      GTTTTTGGCATATATTCTTTT  516
                ||||||| ||||||||||||
Sbjct  1208687  GTTTTTGTTATATATTCTTTT  1208707
```

3.1.335 NC_045512.2 SARS-Cov-2 14850-14871:

ATTTGTAGTTGAAGTTGTTGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14850-14871
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 20/22 (91%), Gaps = 0/22 (0%)
 Strand=Plus/Plus
Query  100      ATTTGTAGTTGAAGTTGTTGAT  121
                |||||  ||||||||||| ||||
Sbjct  1422021  ATTTGCAGTTGAAGTTGCTGAT  1422042
```

3.1.336 NC_045512.2 SARS-Cov-2 7616-7630:

AATTGTGTTAATTGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7616-7630
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  866      AATTGTGTTAATTGT  880
                |||||||||||||||
Sbjct  2001936  AATTGTGTTAATTGT  2001950
```

3.1.337 NC_045512.2 SARS-Cov-2 1018-1032:

GCAGACACCTTTTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1018-1032
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  268     GCAGACACCTTTTGA  282
                |||||||||||||||
Sbjct  415011  GCAGACACCTTTTGA  414997
```

3.1.338 NC_045512.2 SARS-Cov-2 28870-28890:

AGGCAGCAGTAGGGGAACTTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28870-28890
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
```

```
 Strand=Plus/Plus
Query  120    AGGCAGCAGTAGGGGAACTTC  140
              |||||||||||||| | ||||
Sbjct  15188  AGGCAGCAGTAGGGAATCTTC  15208
```

3.1.339 NC_045512.2 SARS-Cov-2 11563-11580:

CCCTATTTTCTTCATAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11563-11580
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  813      CCCTATTTTCTTCATAAC  830
                ||| ||||||||||||||
Sbjct  1697269  CCCAATTTTCTTCATAAC  1697286
```

3.1.340 NC_045512.2 SARS-Cov-2 19750-19764:

GAAAATAAAACAACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19750-19764
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  950     GAAAATAAAACAACA  964
               |||||||||||||||
Sbjct  968013  GAAAATAAAACAACA  968027
```

3.1.341 NC_045512.2 SARS-Cov-2 26792-26810:

GATGTGGCTCAGCTACTTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26792-26810
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  42      GATGTGGCTCAGCTACTTC  60
               || ||||||||||||||||
Sbjct  968101  GAGGTGGCTCAGCTACTTC  968083
```

3.1.342 NC_045512.2 SARS-Cov-2 24475-24499:

TGCAATTTCAAGTGTTTTAAATGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24475-24499
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Minus
Query  975     TGCAATTTCAAGTGTTTTAAATGAT  999
               ||||||||||  |||| || ||||
Sbjct  820987  TGCAATTTCAACGGTTTCAATTGAT  820963
```

3.1.343 NC_045512.2 SARS-Cov-2 4022-4036:

TTGTTACTTTATATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4022-4036
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  272     TTGTTACTTTATATT  286
               |||||||||||||||
Sbjct  663482  TTGTTACTTTATATT  663468
```

3.1.344 NC_045512.2 SARS-Cov-2 9625-9644:

TTCTTTTTTAGCACATATTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9625-9644
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  875      TTCTTTTTTAGCACATATTC  894
                ||||  ||||||||||||||
Sbjct  1199240  TTCTCCTTTAGCACATATTC  1199259
```

3.1.345 NC_045512.2 SARS-Cov-2 5057-5071:

TATTTGGATGGAGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5057-5071
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  307      TATTTGGATGGAGCT  321
                ||||||||||||||
Sbjct  1569013  TATTTGGATGGAGCT  1568999
```

3.1.346 NC_045512.2 SARS-Cov-2 7133-7150:

GTTTGTCTTAGTGGTTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7133-7150
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  383      GTTTGTCTTAGTGGTTTA  400
                |||| ||||||||||||
Sbjct  1734181  GTTTTTCTTAGTGGTTTA  1734164
```

3.1.347 NC_045512.2 SARS-Cov-2 4783-4805:

ACTTGCTGGTTCCTATAAAGATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4783-4805
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Minus
Query  33      ACTTGCTGGTTCCTATAAAGATT  55
               ||||||||||||  | |||||||
Sbjct  353784  ACTTGCTGGTTCGGAGAAAGATT  353762
```

3.1.348 NC_045512.2 SARS-Cov-2 7008-7022:

CTGCTTTAGGTGTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7008-7022
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
```

```
 Strand=Plus/Plus
Query  258     CTGCTTTAGGTGTTT  272
                |||||||||||||||
Sbjct  100209  CTGCTTTAGGTGTTT  100223
```

3.1.349 NC_045512.2 SARS-Cov-2 8268-8285:

ATAGTTGTAATAACTATA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8268-8285
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  518     ATAGTTGTAATAACTATA  535
                |||||||||||||| |||
Sbjct  108933  ATAGTTGTAATAACAATA  108950
```

3.1.350 NC_045512.2 SARS-Cov-2 9937-9954:

TAGCTACAGAGAAGCTGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9937-9954
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  187     TAGCTACAGAGAAGCTGC  204
                ||||| ||||||||||||
Sbjct  786760  TAGCTCCAGAGAAGCTGC  786743
```

3.1.351 NC_045512.2 SARS-Cov-2 26793-26817:

ATGTGGCTCAGCTACTTCATTGCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26793-26817
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Minus
Query  43       ATGTGGCTCAGCTACTTCATTGCTT  67
                 || |||||||||||| || || ||
Sbjct  2029699  ATATGGCTCAGCTACTGCAATGATT  2029675
```

3.1.352 NC_045512.2 SARS-Cov-2 2948-2965:

ATTGATTTAGATGAGTGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2948-2965
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  198      ATTGATTTAGATGAGTGG  215
                |||  ||||||||||||||
Sbjct  1086134  ATTTATTTAGATGAGTGG  1086151
```

3.1.353 NC_045512.2 SARS-Cov-2 8102-8122:

GTTGCAACTGCAGAAGCTGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8102-8122
Score = 39.2 bits (42),  Expect = 0.003
 Identities = 21/21 (100%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  352      GTTGCAACTGCAGAAGCTGAA  372
                |||||||||||||||||||||
Sbjct  1306817  GTTGCAACTGCAGAAGCTGAA  1306797
```

3.1.354 NC_045512.2 SARS-Cov-2 3793-3817:

TGTCTTTGATAAAAATCTCTATGAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3793-3817
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Minus
Query  43      TGTCTTTGATAAAAATCTCTATGAC  67
               |||||  ||||||||||  ||| ||
Sbjct  698836  TGTCTATGATAAAAATCCTTATAAC  698812
```

3.1.355 NC_045512.2 SARS-Cov-2 12775-12794:

TTACTACAACACAACAAAGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12775-12794
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  25      TTACTACAACACAACAAAGG  44
               |||| | ||||||||||||
Sbjct  880430  TTACGAAAACACAACAAAGG  880411
```

3.1.356 NC_045512.2 SARS-Cov-2 21103-21130:

TTTTTCACTTACATTTGTGGGTTTATAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21103-21130
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 24/28 (86%), Gaps = 1/28 (4%)
 Strand=Plus/Minus
Query  353     TTTTTCACTTACATTTGTGGGTTTATAC  380
               |||||||||||| ||| || | ||||||
Sbjct  210730  TTTTTCACTTACTTTTTTGAG-TTATAC  210704
```

3.1.357 NC_045512.2 SARS-Cov-2 5073-5087:

ATGTTACTAAAATAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5073-5087
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  323      ATGTTACTAAAATAA  337
                |||||||||||||||
Sbjct  2102088  ATGTTACTAAAATAA  2102102
```

3.1.358 NC_045512.2 SARS-Cov-2 26424-26450:

TCGTGTTAAAAATCTGAATTCTTCTAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26424-26450
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 23/27 (85%), Gaps = 1/27 (4%)
```

```
 Strand=Plus/Plus
Query  974     TCGTGTTAAAAATCTGAATTCTTCTAG  1000
               ||||||||||||| | ||  ||||||
Sbjct  697914  TCGTGTTAAAAATC-GTATGATTCTAG  697939
```

3.1.359 NC_045512.2 SARS-Cov-2 9985-10005:

CTTCAGTAACTCAGGTTCTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9985-10005
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  235    CTTCAGTAACTCAGGTTCTGA  255
              ||| |||| ||||||||||||
Sbjct  13113  CTTTAGTATCTCAGGTTCTGA  13133
```

3.1.360 NC_045512.2 SARS-Cov-2 15204-15218:

AATTGGAACAAGCAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15204-15218
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  454      AATTGGAACAAGCAA  468
                ||||||||||||||
Sbjct  1456338  AATTGGAACAAGCAA  1456324
```

3.1.361 NC_045512.2 SARS-Cov-2 24052-24077:

TGCTGGCTTCATCAAACAATATGGTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24052-24077
Score = 34.6 bits (37),  Expect = 0.15
 Identities = 23/26 (88%), Gaps = 0/26 (0%)
 Strand=Plus/Plus
Query  302     TGCTGGCTTCATCAAACAATATGGTG  327
               ||||||| | || ||||||||||||
Sbjct  964122  TGCTGGCATTATGAAACAATATGGTG  964147
```

3.1.362 NC_045512.2 SARS-Cov-2 16833-16847:

CTTTGAAAAAGGTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16833-16847
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  83      CTTTGAAAAAGGTGA  97
               |||||||||||||||
Sbjct  788128  CTTTGAAAAAGGTGA  788142
```

3.1.363 NC_045512.2 SARS-Cov-2 23176-23193:

TGTCAATTTCAACTTCAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23176-23193
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  426    TGTCAATTTCAACTTCAA  443
               |||| ||||||||||||
Sbjct  20656  TGTCTATTTCAACTTCAA  20639
```

3.1.364 NC_045512.2 SARS-Cov-2 17004-17023:

CAATATCTCAGATGAGTTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17004-17023
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  254      CAATATCTCAGATGAGTTTT  273
                 |||| ||| ||||||||||
Sbjct  1802666  CAATGTCTGAGATGAGTTTT  1802647
```

3.1.365 NC_045512.2 SARS-Cov-2 8104-8119:

TGCAACTGCAGAAGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8104-8119
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  354     TGCAACTGCAGAAGCT  369
               ||||||||||||||||
Sbjct  735251  TGCAACTGCAGAAGCT  735236
```

3.1.366 NC_045512.2 SARS-Cov-2 24878-24892:

CAAAGGAATTTTTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24878-24892
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  128      CAAAGGAATTTTTAT  142
                ||||||||||||||
Sbjct  1903843  CAAAGGAATTTTTAT  1903829
```

3.1.367 NC_045512.2 SARS-Cov-2 17263-17283:

TTTGATAAATTCAAAGTGAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17263-17283
Score = 34.6 bits (37),  Expect = 0.15
 Identities = 20/21 (95%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  513     TTTGATAAATTCAAAGTGAAT  533
               |||||||||||||||||| ||
Sbjct  457711  TTTGATAAATTCAAAGTGGAT  457691
```

3.1.368 NC_045512.2 SARS-Cov-2 10600-10617:

TGGACCTTTTGTTGACAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10600-10617
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
```

```
 Strand=Plus/Plus
Query  850      TGGACCTTTTGTTGACAG  867
                || ||||||||||||||||
Sbjct  1818892  TGCACCTTTTGTTGACAG  1818909
```

3.1.369 NC_045512.2 SARS-Cov-2 2676-2690:

CTAATATGATGGTAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2676-2690
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  926      CTAATATGATGGTAA  940
                |||||||||||||||
Sbjct  1870932  CTAATATGATGGTAA  1870946
```

3.1.370 NC_045512.2 SARS-Cov-2 18557-18593:

CACTTAAAAATCTCTCTGACAGAGTCGTATTTGTCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18557-18593
Score = 37.4 bits (40),  Expect = 0.012
 Identities = 31/37 (84%), Gaps = 1/37 (3%)
 Strand=Plus/Minus
Query  807     CACTTAAAAATCTCTCTGACAGAGTCGTATTTGTCTT  843
                ||||||||| | ||||| |||||   ||||||||||
Sbjct  590600  CACTTAAAA-TATCTCTTACAGAAGTGTATTTGTCTT  590565
```

3.1.371 NC_045512.2 SARS-Cov-2 27694-27713:

TTTCTTATTGTTGCGGCAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27694-27713
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  944    TTTCTTATTGTTGCGGCAAT  963
              |||||||||||| | |||||
Sbjct  74398  TTTCTTATTGTTTCAGCAAT  74417
```

3.1.372 NC_045512.2 SARS-Cov-2 7490-7510:

TGTATGATGTGTTACAAACGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7490-7510
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  740     TGTATGATGTGTTACAAACGT  760
               |||||| |||||||||||  ||
Sbjct  961359  TGTATGTTGTGTTACAAATGT  961339
```

3.1.373 NC_045512.2 SARS-Cov-2 29112-29133:

AACAAACCCAAGGAAATTTTGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29112-29133
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 21/22 (95%), Gaps = 1/22 (5%)
 Strand=Plus/Plus
Query  362     AACAAACCCAAGGAAATTTTGG  383
               |||||||||| |||||||||||
Sbjct  932989  AACAAACCCAA-GAAATTTTGG  933009
```

3.1.374 NC_045512.2 SARS-Cov-2 8296-8310:

TAACAAAGTTGAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8296-8310
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  546      TAACAAAGTTGAAAA  560
               |||||||||||||||
Sbjct  2125999  TAACAAAGTTGAAAA  2126013
```

3.1.375 NC_045512.2 SARS-Cov-2 25961-25981:

CTGAAAAATGGGAATCTGGAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25961-25981
Score = 34.6 bits (37),  Expect = 0.15
 Identities = 20/21 (95%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  211     CTGAAAAATGGGAATCTGGAG  231
               ||||||||||| |||||||||
Sbjct  938744  CTGAAAAATGGCAATCTGGAG  938764
```

3.1.376 NC_045512.2 SARS-Cov-2 7822-7852:

TCATTTTGTTAACTT-AGACAACCTGAGAGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7822-7852
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 27/32 (84%), Gaps = 1/32 (3%)
 Strand=Plus/Minus
Query  72       TCATTTTGTTAACTT-AGACAACCTGAGAGCT  102
                ||| | ||||| ||| ||||||||||| |||
Sbjct  1165848  TCAGTCTGTTATCTTTAGACAACCTGAGCGCT  1165817
```

3.1.377 NC_045512.2 SARS-Cov-2 29419-29444:

ACCGCAGAGACAGAAGAAACAGCAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29419-29444
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 22/26 (85%), Gaps = 0/26 (0%)
 Strand=Plus/Minus
Query  669     ACCGCAGAGACAGAAGAAACAGCAAA  694
               ||| | ||| ||||||||||||| ||
Sbjct  546880  ACCCCTGAGCCAGAAGAAACAGCGAA  546855
```

3.1.378 NC_045512.2 SARS-Cov-2 17754-17773:

GAGAAAAGCTGTCTTTATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17754-17773
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Minus
Query  4       GAGAAAAGCTGTCTTTATTT  23
               |||||||||||  | ||||||
Sbjct  375428  GAGAAAAGCTGACGTTATTT  375409
```

3.1.379 NC_045512.2 SARS-Cov-2 16927-16941:

ACAGTAATGCCATTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16927-16941
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  177      ACAGTAATGCCATTA  191
                |||||||||||||||
Sbjct  1910838  ACAGTAATGCCATTA  1910852
```

3.1.380 NC_045512.2 SARS-Cov-2 27100-27119:

TTGCTGCATACAGTCGCTAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27100-27119
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  350     TTGCTGCATACAGTCGCTAC  369
               ||||||||||||| || ||
Sbjct  769180  TTGCTGCATACAGTTGCCAC  769161
```

3.1.381 NC_045512.2 SARS-Cov-2 11448-11478:

ATCAAGCCATTTCCATGTGGGCTCTTATAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11448-11478
Score = 36.5 bits (39),  Expect = 0.042
 Identities = 27/31 (87%), Gaps = 2/31 (6%)
 Strand=Plus/Plus
Query  698      ATCAAGCCATTTCCATGTGGGCTCTTATAAT  728
                |||||||||||  |||  ||| ||||||||||
Sbjct  1109570  ATCAAGCCATTGCCA--TGGTCTCTTATAAT  1109598
```

3.1.382 NC_045512.2 SARS-Cov-2 23909-23928:

GCACAAGTCAAACAAATTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23909-23928
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  159      GCACAAGTCAAACAAATTTA  178
                ||||  | ||||||||||||
Sbjct  1300034  GCACGAATCAAACAAATTTA  1300015
```

3.1.383 NC_045512.2 SARS-Cov-2 24712-24727:

GTCCTTCCCTCAGTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24700-24727
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 24/28 (86%), Gaps = 2/28 (7%)
 Strand=Plus/Minus
Query  950     CTATCATCTTATGTCCTTCCCTCAGTCA  977
               ||||||  |  | ||||||||||||||
Sbjct  680592  CTATCAGC--AAGTCCTTCCCTCAGTCA  680567


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24712-24727
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  12      GTCCTTCCCTCAGTCA  27
               ||||||||||||||||
Sbjct  680582  GTCCTTCCCTCAGTCA  680567
```

3.1.384 NC_045512.2 SARS-Cov-2 21946-21966:

TAAAGTCTGTGAATTTCAATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21946-21966
Score = 30.1 bits (32),  Expect = 1.8
```

```
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  196      TAAAGTCTGTGAATTTCAATT  216
                ||||  ||||||||||||| ||
Sbjct  1806507  TAAAATCTGTGAATTTCACTT  1806487
```

3.1.385 NC_045512.2 SARS-Cov-2 23428-23443:

TGCTATTCATGCAGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23428-23443
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  678      TGCTATTCATGCAGAT  693
                ||||||||||||||||
Sbjct  1471747  TGCTATTCATGCAGAT  1471732
```

3.1.386 NC_045512.2 SARS-Cov-2 8239-8256:

ACATCAATCTGACATAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8239-8256
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  489     ACATCAATCTGACATAGA  506
                |||||||||||||| |||
Sbjct  955042  ACATCAATCTGACAGAGA  955025
```

3.1.387 NC_045512.2 SARS-Cov-2 29806-29823:

ATGTGTAAAATTAATTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29806-29823
Score = 29.2 bits (31),  Expect = 0.84
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  56       ATGTGTAAAATTAATTTT  73
                || ||||||||||||||
Sbjct  1731941  ATTTGTAAAATTAATTTT  1731924
```

3.1.388 NC_045512.2 SARS-Cov-2 19878-19897:

GGACTACAAAAGAGATGCTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19878-19897
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  128     GGACTACAAAAGAGATGCTC  147
                ||||| |||||||||||  ||
Sbjct  555936  GGACTGCAAAAGAGATGATC  555917
```

3.1.389 NC_045512.2 SARS-Cov-2 1266-1280:

GCGATTTTGTTAAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1266-1280
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  516      GCGATTTTGTTAAAG  530
                |||||||||||||||
Sbjct  1392379  GCGATTTTGTTAAAG  1392365
```

3.1.390 NC_045512.2 SARS-Cov-2 29855-29874:

TTCTTAGGAGAATGACaaaa

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29855-29874
Score = 23.8 bits (25),  Expect = 8.9
 Identities = 17/20 (85%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  5        TTCTTAGGAGAATGACaaaa  24
                ||||||||||||  ||| ||
Sbjct  1592423  TTCTTAGGAGAAAAACATAA  1592404
```

3.1.391 NC_045512.2 SARS-Cov-2 969-986:

AGCATGAAATTGCTTGGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  969-986
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  219      AGCATGAAATTGCTTGGT  236
                ||||||||||| |||||
Sbjct  1216855  AGCATGAAATTGTTTGGT  1216872
```

3.1.392 NC_045512.2 SARS-Cov-2 28948-28978:

CAGATTGAACCAGCTTGAGAGCAAAATGTCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28948-28978
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 26/31 (84%), Gaps = 1/31 (3%)
 Strand=Plus/Plus
Query  198      CAGATTGAACCAGCTTGAGAGCAAAATGTCT  228
                ||||| ||||||||||||  |  |||||||
Sbjct  1424304  CAGAT-GAACCAGCTTGAGCTCCTAATGTCT  1424333
```

3.1.393 NC_045512.2 SARS-Cov-2 19003-19023:

TTAG-CAGACAAATTCCCAGTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18999-19023
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 23/26 (88%), Gaps = 1/26 (4%)
 Strand=Plus/Plus
Query  249      ATTATTAG-CAGACAAATTCCCAGTT  273
                ||| |||| |||| ||||||||||||
Sbjct  1052883  ATTTTTAGACAGAAAAATTCCCAGTT  1052908


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19003-19023
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 20/22 (91%), Gaps = 1/22 (5%)
 Strand=Plus/Plus
Query  3        TTAG-CAGACAAATTCCCAGTT  23
                |||| |||| ||||||||||||
```

```
Sbjct  1052887  TTAGACAGAAAAATTCCCAGTT  1052908
```

3.1.394 NC_045512.2 SARS-Cov-2 6402-6416:

CAGTCTCTGAAGAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6402-6416
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  652      CAGTCTCTGAAGAAG  666
                ||||||||||||||
Sbjct  1601643  CAGTCTCTGAAGAAG  1601657
```

3.1.395 NC_045512.2 SARS-Cov-2 22687-22702:

CACTTTTAAGTGTTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22687-22702
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  937      CACTTTTAAGTGTTAT  952
                ||||||||||||||||
Sbjct  1018406  CACTTTTAAGTGTTAT  1018421
```

3.1.396 NC_045512.2 SARS-Cov-2 12211-12237:

GTCTTTGAATGTGGCTAAATCTGAATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12211-12237
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 24/27 (89%), Gaps = 1/27 (4%)
 Strand=Plus/Plus
Query  461    GTCTTTGAATGTGGCTAAATCTGAATT  487
              ||| ||||| ||| ||||||||||||
Sbjct  65571  GTCCTTGAA-GTGCCTAAATCTGAATT  65596
```

3.1.397 NC_045512.2 SARS-Cov-2 8765-8779:

TTTGACACATGGTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8765-8779
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  15       TTTGACACATGGTTT  29
                ||||||||||||||
Sbjct  1432800  TTTGACACATGGTTT  1432786
```

3.1.398 NC_045512.2 SARS-Cov-2 1576-1593:

TGTTGTTGGAGAAGGTTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1576-1593
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  826     TGTTGTTGGAGAAGGTTC  843
                |||||||||| ||||||
Sbjct  480797  TGTTGTTGGAGCAGGTTC  480814
```

3.1.399 NC_045512.2 SARS-Cov-2 23093-23112:

GTAGTACTTTCTTTTGAACT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23093-23112
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  343     GTAGTACTTTCTTTTGAACT  362
                |||||||||||| | ||||
Sbjct  812152  GTAGTACTTTCTTATAAACT  812133
```

3.1.400 NC_045512.2 SARS-Cov-2 21060-21078:

TAAGACTAAAAATG-TTACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21060-21078
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 19/20 (95%), Gaps = 1/20 (5%)
 Strand=Plus/Plus
Query  310     TAAGACTAAAAATG-TTACA  328
               ||||||||||||| |||||
Sbjct  512978  TAAGACTAAAAATGATTACA  512997
```

3.1.401 NC_045512.2 SARS-Cov-2 9622-9638:

TGTTTCTTTTTTAGCAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9622-9638
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 17/17 (100%), Gaps = 0/17 (0%)
 Strand=Plus/Plus
Query  872     TGTTTCTTTTTTAGCAC  888
               |||||||||||||||||
Sbjct  463603  TGTTTCTTTTTTAGCAC  463619
```

3.1.402 NC_045512.2 SARS-Cov-2 20724-20740:

AGAAAAGTGTGACCTTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20724-20740
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 17/17 (100%), Gaps = 0/17 (0%)
 Strand=Plus/Plus
Query  974      AGAAAAGTGTGACCTTC  990
               |||||||||||||||||
Sbjct  1006801  AGAAAAGTGTGACCTTC  1006817
```

3.1.403 NC_045512.2 SARS-Cov-2 29324-29341:

ATTTTGCTGAATAAGCAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29324-29341
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
```

```
 Strand=Plus/Plus
Query  574     ATTTTGCTGAATAAGCAT  591
                |||||||||||||| |||
Sbjct  216694  ATTTTGCTGAATAAACAT  216711
```

3.1.404 NC_045512.2 SARS-Cov-2 962-989:

GAACATGAGCATGAAAT–TGCTTGGTACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  962-989
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 25/30 (83%), Gaps = 2/30 (7%)
 Strand=Plus/Plus
Query  212     GAACATGAGCATGAAAT--TGCTTGGTACA  239
                |||||||||||| |||||  ||  |||||||
Sbjct  550063  GAACATGAGCAAGAAATCATGTCTGGTACA  550092
```

3.1.405 NC_045512.2 SARS-Cov-2 15871-15893:

GAATTTTGCTCTCAACATACAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15871-15893
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Plus
Query  121      GAATTTTGCTCTCAACATACAAT  143
                 || |||| |||||||||||| |||
Sbjct  1802126  GATTTTTACTCTCAACATAAAAT  1802148
```

3.1.406 NC_045512.2 SARS-Cov-2 21865-21879:

AAGAGGCTGGATTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21865-21879
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  115     AAGAGGCTGGATTTT  129
                |||||||||||||||
Sbjct  706636  AAGAGGCTGGATTTT  706622
```

3.1.407 NC_045512.2 SARS-Cov-2 1760-1775:

TTCAAACAAATTGTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1760-1775
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  10       TTCAAACAAATTGTTG  25
                ||||||||||||||||
Sbjct  1926670  TTCAAACAAATTGTTG  1926655
```

3.1.408 NC_045512.2 SARS-Cov-2 20002-20019:

GATGGTCAAGTAGACTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20002-20019
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  252      GATGGTCAAGTAGACTTA  269
                ||||||||||||| |||
Sbjct  1165448  GATGGTCAAGTAGAATTA  1165431
```

3.1.409 NC_045512.2 SARS-Cov-2 19338-19358:

AAGTGCTTTTGTTAATTTAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19338-19358
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  588     AAGTGCTTTTGTTAATTTAAA  608
                |||||||||||| | ||||||
Sbjct  538735  AAGTGCTTTTGTGATTTTAAA  538755
```

3.1.410 NC_045512.2 SARS-Cov-2 22002-22020:

AAAACAACAAAAGTTGGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22002-22020
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  252      AAAACAACAAAAGTTGGAT  270
                ||||||||||||| |||||
Sbjct  1075716  AAAACAACAAAAGGTGGAT  1075734
```

3.1.411 NC_045512.2 SARS-Cov-2 8776-8796:

GTTTAGCCAGCGTGGTGGTAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8776-8796
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  26       GTTTAGCCAGCGTGGTGGTAG  46
                ||||||||||| | |||||||
Sbjct  1841405  GTTTAGCCAGCATTGTGGTAG  1841385
```

3.1.412 NC_045512.2 SARS-Cov-2 3668-3682:

TATGAAAATTTTAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3668-3682
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  918     TATGAAAATTTTAAT  932
               |||||||||||||||
Sbjct  596145  TATGAAAATTTTAAT  596159
```

3.1.413 NC_045512.2 SARS-Cov-2 17853-17868:

AGAATATGACTATGTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17853-17868
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
```

```
 Strand=Plus/Plus
Query  103      AGAATATGACTATGTC  118
                ||||||||||||||||
Sbjct  1050500  AGAATATGACTATGTC  1050515
```

3.1.414 NC_045512.2 SARS-Cov-2 20049-20081:

TACAGAAGGTAGTGTTAAAGGTTTACAACCATC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20049-20081
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 26/33 (79%), Gaps = 0/33 (0%)
 Strand=Plus/Plus
Query  299      TACAGAAGGTAGTGTTAAAGGTTTACAACCATC  331
                |||||||||||| | |||||| |    |||||||
Sbjct  2063005  TACAGAAGGTACTTTTAAAGATAACAAACCATC  2063037
```

3.1.415 NC_045512.2 SARS-Cov-2 23160-23174:

TGGTTAAAAACAAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23160-23174
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  410     TGGTTAAAAACAAAT  424
               |||||||||||||||
Sbjct  400065  TGGTTAAAAACAAAT  400079
```

3.1.416 NC_045512.2 SARS-Cov-2 22744-22758:

TGTCTATGCAGATTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22744-22758
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  944    TGTCTATGCAGATTC  958
              |||||||||||||||
Sbjct  10432  TGTCTATGCAGATTC  10446
```

3.1.417 NC_045512.2 SARS-Cov-2 13054-13071:

TTCAACTGTATTATCTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13054-13071
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  304      TTCAACTGTATTATCTTT  321
                ||||||||||||| |||
Sbjct  1005657  TTCAACTGTATTATTTTT  1005640
```

3.1.418 NC_045512.2 SARS-Cov-2 27943-27961:

ACCAAGAATGTAGTTTACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27943-27961
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  193      ACCAAGAATGTAGTTTACA  211
                |||||| ||||||||||||
Sbjct  1690984  ACCAAGGATGTAGTTTACA  1691002
```

3.1.419 NC_045512.2 SARS-Cov-2 26662-26680:

ATATAATTAAGTTAATTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26662-26680
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  912     ATATAATTAAGTTAATTTT  930
                ||| ||||||||||||||
Sbjct  175496  ATAGAATTAAGTTAATTTT  175514
```

3.1.420 NC_045512.2 SARS-Cov-2 25441-25461:

CAAGG-TGAAATCAAGGATGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25441-25461
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 20/22 (91%), Gaps = 1/22 (5%)
 Strand=Plus/Minus
Query  691      CAAGG-TGAAATCAAGGATGCT  711
                |||||  | ||||||||||||||
Sbjct  1029587  CAAGGATAAAATCAAGGATGCT  1029566
```

3.1.421 NC_045512.2 SARS-Cov-2 1337-1360:

GGTTA-CTTACCCCAAAATGCTGTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1337-1360
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 22/25 (88%), Gaps = 1/25 (4%)
 Strand=Plus/Minus
Query  587      GGTTA-CTTACCCCAAAATGCTGTT  610
                |||||  |||| | ||||||||||||
Sbjct  1680346  GGTTATCTTAGCTCAAAATGCTGTT  1680322
```

3.1.422 NC_045512.2 SARS-Cov-2 17256-17270:

AGAGTGTTTTGATAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17256-17270
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  506      AGAGTGTTTTGATAA  520
                |||||||||||||||
Sbjct  1984915  AGAGTGTTTTGATAA  1984901
```

3.1.423 NC_045512.2 SARS-Cov-2 18664-18700:

CTATGTGATAGACGTGCCACATGCTTTTCCACTGCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  18664-18700
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 29/37 (78%), Gaps = 2/37 (5%)
```

```
 Strand=Plus/Minus
Query  914     CTATGTGATAGACGTGCCACATGCTTTTCCACTGCTT  950
                || ||||||||||| ||||  |||| |   ||||||
Sbjct  647382  CTCTGTGATAGACGTTCCAC--GCTTGTTATCTGCTT  647348
```

3.1.424 NC_045512.2 SARS-Cov-2 2371-2385:

CTTGAATTTAGGTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2371-2385
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  621      CTTGAATTTAGGTGA  635
                |||||||||||||||
Sbjct  1790524  CTTGAATTTAGGTGA  1790510
```

3.1.425 NC_045512.2 SARS-Cov-2 2496-2510:

GAGAAACACTTCCCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2496-2510
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  746      GAGAAACACTTCCCA  760
                |||||||||||||||
Sbjct  1303651  GAGAAACACTTCCCA  1303637
```

3.1.426 NC_045512.2 SARS-Cov-2 22262-22296:

AACATCACTAGGTTTCAAACTTT–ACTTGCTTTACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22262-22296
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 29/37 (78%), Gaps = 2/37 (5%)
 Strand=Plus/Minus
Query  512     AACATCACTAGGTTTCAAACTTT--ACTTGCTTTACA  546
                ||| || | | | ||||| ||||  ||||||||||||
Sbjct  802062  AACTTCTCAAAGCTTCAATCTTTTTACTTGCTTTACA  802026
```

3.1.427 NC_045512.2 SARS-Cov-2 19941-19960:

AGCCAAGAAACCAACTGAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19941-19960
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  191     AGCCAAGAAACCAACTGAAA  210
               || |||||||||||||| ||
Sbjct  316073  AGTCAAGAAACCAACTGCAA  316054
```

3.1.428 NC_045512.2 SARS-Cov-2 1800-1819:

CAAAAGGAAAAGCTAAAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1800-1819
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  50      CAAAAGGAAAAGCTAAAAAA  69
               |||||||||||| ||| ||
Sbjct  669364  CAAAAGGAAAAGCAAAATAA  669345
```

3.1.429 NC_045512.2 SARS-Cov-2 12857-12871:

AAGAGTGATGGAACT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12857-12871
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  107      AAGAGTGATGGAACT  121
                |||||||||||||||
Sbjct  1554428  AAGAGTGATGGAACT  1554414
```

3.1.430 NC_045512.2 SARS-Cov-2 17662-17676:

TATAAGGGTGTTATC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17662-17676
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  912      TATAAGGGTGTTATC  926
                ||||||||||||||
Sbjct  1838166  TATAAGGGTGTTATC  1838152
```

3.1.431 NC_045512.2 SARS-Cov-2 23000-23014:

TGTAATGGTGTTGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23000-23014
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  250      TGTAATGGTGTTGAA  264
                ||||||||||||||
Sbjct  1054027  TGTAATGGTGTTGAA  1054013
```

3.1.432 NC_045512.2 SARS-Cov-2 9396-9411:

CAGCATCTATAGTAGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9396-9411
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  646      CAGCATCTATAGTAGC  661
                ||||||||||||||||
Sbjct  1123138  CAGCATCTATAGTAGC  1123153
```

3.1.433 NC_045512.2 SARS-Cov-2 22057-22072:

TTGCACTTTTGAATAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22057-22072
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
```

```
 Strand=Plus/Minus
Query  307     TTGCACTTTTGAATAT  322
               ||||||||||||||||
Sbjct  346172  TTGCACTTTTGAATAT  346157
```

3.1.434 NC_045512.2 SARS-Cov-2 1807-1821:

AAAAGCTAAAAAAGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1807-1821
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  57       AAAAGCTAAAAAAGG  71
               ||||||||||||||||
Sbjct  2053809  AAAAGCTAAAAAAGG  2053823
```

3.1.435 NC_045512.2 SARS-Cov-2 23717-23740:

ACTATTAGTGTTACCACAGAAATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23717-23740
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 21/24 (88%), Gaps = 0/24 (0%)
 Strand=Plus/Plus
Query  967      ACTATTAGTGTTACCACAGAAATT  990
               ||| ||||| | ||||||||||||
Sbjct  1115188  ACTTTTAGTATAACCACAGAAATT  1115211
```

3.1.436 NC_045512.2 SARS-Cov-2 8372-8392:

GTAGCAAAAAGTCACAACATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  8372-8392
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 20/21 (95%), Gaps = 1/21 (5%)
 Strand=Plus/Minus
Query  622     GTAGCAAAAAGTCACAACATT  642
               |||| ||||||||||||||||
Sbjct  367188  GTAG-AAAAAGTCACAACATT  367169
```

3.1.437 NC_045512.2 SARS-Cov-2 2570-2587:

CCTACTAGTGAAGCTGTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2570-2587
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  820      CCTACTAGTGAAGCTGTT  837
                |||  ||||||||||||||
Sbjct  1917499  CCTTCTAGTGAAGCTGTT  1917516
```

3.1.438 NC_045512.2 SARS-Cov-2 17963-17982:

TGTCTGATAGAGACC–TTTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17963-17982
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/22 (91%), Gaps = 2/22 (9%)
 Strand=Plus/Minus
Query  213      TGTCTGATAGAGACC--TTTAT  232
                ||||||||||||||  |||||
Sbjct  1527647  TGTCTGATAGAGACCAATTTAT  1527626
```

3.1.439 NC_045512.2 SARS-Cov-2 3193-3212:

AGAAGATTGGTTAGATGATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3193-3212
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  443     AGAAGATTGGTTAGATGATG  462
                ||||||  | ||||||||||
Sbjct  995083  AGAAGAATTGTTAGATGATG  995102
```

3.1.440 NC_045512.2 SARS-Cov-2 14851-14871:

TTTGTAGTTGAAGTTGTTGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14850-14871
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 20/22 (91%), Gaps = 0/22 (0%)
 Strand=Plus/Plus
Query  100      ATTTGTAGTTGAAGTTGTTGAT  121
                |||||  ||||||||||| ||||
Sbjct  1422021  ATTTGCAGTTGAAGTTGCTGAT  1422042


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14851-14871
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  1        TTTGTAGTTGAAGTTGTTGAT  21
                ||||  ||||||||||| ||||
Sbjct  1422022  TTTGCAGTTGAAGTTGCTGAT  1422042
```

3.1.441 NC_045512.2 SARS-Cov-2 6610-6649:

AGTATTAGGT-TTGAAAACCCTTGCTACTCATG-GTTTAGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6610-6649
Score = 34.6 bits (37),  Expect = 0.15
 Identities = 35/42 (83%), Gaps = 3/42 (7%)
 Strand=Plus/Minus
Query  860     AGTATTAGGT-TTGAAAACCCTTGCTACTCATG-GTTTAGCT  899
                |||||  | ||  |||||||||||||  ||||  |||  ||||  |||
Sbjct  869932  AGTATCAAGTGTTGAAAACCCTTGATACT-ATGCGTTTTGCT  869892
```

3.1.442 NC_045512.2 SARS-Cov-2 2807-2827:

AGGATTGATAAAGTACTTAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2807-2827
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Minus
Query  57       AGGATTGATAAAGTACTTAAT  77
                |||  |  ||||||||||||||
```

```
Sbjct  1300354  AGGGTGGATAAAGTACTTAAT  1300334
```

3.1.443 NC_045512.2 SARS-Cov-2 13094-13113:

GCTAAAGCTTACAAAGATTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13094-13113
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  344      GCTAAAGCTTACAAAGATTA  363
                ||||||||||| ||||| ||
Sbjct  1935274  GCTAAAGCTTATAAAGAATA  1935255
```

3.1.444 NC_045512.2 SARS-Cov-2 27667-27681:

GAAGTTCAAGAACTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27667-27681
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  917      GAAGTTCAAGAACTT  931
                |||||||||||||||
Sbjct  1142835  GAAGTTCAAGAACTT  1142849
```

3.1.445 NC_045512.2 SARS-Cov-2 26422-26441:

TCTCGTGTTAAAAATCTGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26422-26441
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  672     TCTCGTGTTAAAAATCTGAA  691
               ||| |||||||||||| ||
Sbjct  237314  TCTTGTGTTAAAAATCTTAA  237295
```

3.1.446 NC_045512.2 SARS-Cov-2 3716-3742:

GCTGGTATTTTTGGTGCTGACCCTATA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3716-3742
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 24/27 (89%), Gaps = 1/27 (4%)
 Strand=Plus/Minus
Query  966      GCTGGTATTTTTGGTGCTGACCCTATA  992
                |||||  |||||||||||||  ||||  ||
Sbjct  1512962  GCTGG-ATTTTTGGTGCTGCCCCTTTA  1512937
```

3.1.447 NC_045512.2 SARS-Cov-2 24205-24231:

AATCACTTCTGGTTGGACCTTTGGTGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24205-24231
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 23/27 (85%), Gaps = 0/27 (0%)
 Strand=Plus/Plus
Query  455     AATCACTTCTGGTTGGACCTTTGGTGC  481
               |||||||||||||| |||   ||||||
Sbjct  770232  AATCACTTCTGGTTTGACAAATGGTGC  770258
```

3.1.448 NC_045512.2 SARS-Cov-2 14855-14870:

TAGTTGAAGTTGTTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14855-14870
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  105    TAGTTGAAGTTGTTGA  120
              ||||||||||||||||
Sbjct  12965  TAGTTGAAGTTGTTGA  12980
```

3.1.449 NC_045512.2 SARS-Cov-2 12571-12587:

AGATGCAGATAGTAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12571-12587
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 17/17 (100%), Gaps = 0/17 (0%)
 Strand=Plus/Plus
Query  821     AGATGCAGATAGTAAAA  837
               |||||||||||||||||
Sbjct  362768  AGATGCAGATAGTAAAA  362784
```

3.1.450 NC_045512.2 SARS-Cov-2 4321-4337:

CTTTTACATTCTACCAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4321-4337
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 17/17 (100%), Gaps = 0/17 (0%)
 Strand=Plus/Plus
Query  571      CTTTTACATTCTACCAT  587
                |||||||||||||||||
Sbjct  1650276  CTTTTACATTCTACCAT  1650292
```

3.1.451 NC_045512.2 SARS-Cov-2 4527-4541:

GATTTTACTTTTACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4527-4541
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  777      GATTTTACTTTTACA  791
                |||||||||||||||
Sbjct  1093429  GATTTTACTTTTACA  1093415
```

3.1.452 NC_045512.2 SARS-Cov-2 16855-16885:

GATGCTGTTGTTTACCGAGGTACAACAACTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16855-16885
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 25/31 (81%), Gaps = 0/31 (0%)
```

```
 Strand=Plus/Plus
Query  105      GATGCTGTTGTTTACCGAGGTACAACAACTT  135
                ||||  |||||  | | | | ||||||||||||
Sbjct  1632159  GATGATGTTGGTAAGCCAAGTACAACAACTT  1632189
```

3.1.453 NC_045512.2 SARS-Cov-2 15695-15712:

ATTTCTCAATGATGATAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15695-15712
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  945      ATTTCTCAATGATGATAC  962
                |||||||||||||||  ||
Sbjct  1198632  ATTTCTCAATGATGACAC  1198649
```

3.1.454 NC_045512.2 SARS-Cov-2 26094-26109:

TAAAATTGTTGATGAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26094-26109
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  344      TAAAATTGTTGATGAG  359
                ||||||||||||||||
Sbjct  1754940  TAAAATTGTTGATGAG  1754925
```

3.1.455 NC_045512.2 SARS-Cov-2 12333-12349:

CAAAAGTTACTAGTGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12333-12349
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 17/17 (100%), Gaps = 0/17 (0%)
 Strand=Plus/Minus
Query  583      CAAAAGTTACTAGTGCT  599
                |||||||||||||||||
Sbjct  1782012  CAAAAGTTACTAGTGCT  1781996
```

3.1.456 NC_045512.2 SARS-Cov-2 13929-13950:

TGATTTTGTAGAAAACCCAGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13929-13950
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 20/22 (91%), Gaps = 1/22 (5%)
 Strand=Plus/Minus
Query  179      TGATTTTGTAGAAAACCCAGAT  200
                ||||||||||||| | ||||||
Sbjct  1825403  TGATTTTGTAGAACA-CCAGAT  1825383
```

3.1.457 NC_045512.2 SARS-Cov-2 14680-14705:

AATTTTAACAAAGACTTCTATGACTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14680-14705
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 22/26 (85%), Gaps = 0/26 (0%)
 Strand=Plus/Minus
Query  930     AATTTTAACAAAGACTTCTATGACTT  955
               || ||| ||||||||||| ||| ||
Sbjct  524419  AAATTTGACAAAGACTTCTTTGATTT  524394
```

3.1.458 NC_045512.2 SARS-Cov-2 5632-5646:

TGGTAAACAAGCTAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5632-5646
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  882     TGGTAAACAAGCTAC  896
               |||||||||||||||
Sbjct  811175  TGGTAAACAAGCTAC  811189
```

3.1.459 NC_045512.2 SARS-Cov-2 24700-24727:

CTATCATCTTATGTCCTTCCCTCAGTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24700-24727
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 24/28 (86%), Gaps = 2/28 (7%)
 Strand=Plus/Minus
Query  950     CTATCATCTTATGTCCTTCCCTCAGTCA  977
               ||||||  |  | ||||||||||||||
Sbjct  680592  CTATCAGC--AAGTCCTTCCCTCAGTCA  680567
```

3.1.460 NC_045512.2 SARS-Cov-2 2051-2068:

GTTGTAATGGCCTACATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2051-2068
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  301     GTTGTAATGGCCTACATT  318
               ||||||||||||| |||
Sbjct  370897  GTTGTAATGGCCTATATT  370914
```

3.1.461 NC_045512.2 SARS-Cov-2 9782-9797:

AGTACTTTTGAAGAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9782-9797
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  32       AGTACTTTTGAAGAAG  47
                ||||||||||||||||
Sbjct  1590054  AGTACTTTTGAAGAAG  1590039
```

3.1.462 NC_045512.2 SARS-Cov-2 13805-13819:

ACACAATGGCAGACC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13805-13819
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
```

```
 Strand=Plus/Minus
Query  55       ACACAATGGCAGACC  69
                 |||||||||||||||
Sbjct  1648496  ACACAATGGCAGACC  1648482
```

3.1.463 NC_045512.2 SARS-Cov-2 14917-14932:

GTCATCGTCAACAACC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14917-14932
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  167     GTCATCGTCAACAACC  182
                ||||||||||||||||
Sbjct  674997  GTCATCGTCAACAACC  675012
```

3.1.464 NC_045512.2 SARS-Cov-2 1702-1716:

TTTTTCTGCTTCCAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1702-1716
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  952      TTTTTCTGCTTCCAC  966
                 |||||||||||||||
Sbjct  1884997  TTTTTCTGCTTCCAC  1885011
```

3.1.465 NC_045512.2 SARS-Cov-2 6396-6410:

TAAAACCAGTCTCTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6396-6410
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  646     TAAAACCAGTCTCTG  660
                |||||||||||||||
Sbjct  621474  TAAAACCAGTCTCTG  621460
```

3.1.466 NC_045512.2 SARS-Cov-2 3204-3224:

TAGATGATGATAGTCAACAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3204-3224
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  454     TAGATGATGATAGTCAACAAA  474
               ||||||||||| | |||||||
Sbjct  729870  TAGATGATGATTGGCAACAAA  729890
```

3.1.467 NC_045512.2 SARS-Cov-2 4333-4359:

ACCATCTATTATCTCTAATGAG-AAGCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4333-4359
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 24/28 (86%), Gaps = 1/28 (4%)
 Strand=Plus/Minus
Query  583     ACCATCTATTATCTCTAATGAG-AAGCA  609
               |||||||||||| ||||  |||| |||||
Sbjct  894697  ACCATCTATTAACTCTTTTGAGTAAGCA  894670
```

3.1.468 NC_045512.2 SARS-Cov-2 6691-6705:

TAAGCCTTTTCTTAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6691-6705
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  941     TAAGCCTTTTCTTAA  955
               |||||||||||||||
Sbjct  882189  TAAGCCTTTTCTTAA  882175
```

3.1.469 NC_045512.2 SARS-Cov-2 7271-7290:

AGGTTTTTCTATGTACTTGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7271-7290
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  521      AGGTTTTTCTATGTACTTGG  540
                ||||||||||| || ||||
Sbjct  1468240  AGGTTTTTCTATTTATTTGG  1468259
```

3.1.470 NC_045512.2 SARS-Cov-2 10450-10464:

CAATTTCACTATTAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10450-10464
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  700      CAATTTCACTATTAA  714
                |||||||||||||||
Sbjct  1803753  CAATTTCACTATTAA  1803767
```

3.1.471 NC_045512.2 SARS-Cov-2 22987-23006:

CGGTAGCACACCTTGTAATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22987-23006
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  237     CGGTAGCACACCTTGTAATG  256
                |||| | ||||||||||||
Sbjct  105991  CGGTGGGACACCTTGTAATG  106010
```

3.1.472 NC_045512.2 SARS-Cov-2 1673-1692:

AATGAAGAGATCGCCATTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1673-1692
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
```

```
 Strand=Plus/Plus
Query  923      AATGAAGAGATCGCCATTAT  942
                ||||||||||| ||| |||
Sbjct  1843544  AATGAAGAGATCTCCAATAT  1843563
```

3.1.473 NC_045512.2 SARS-Cov-2 23965-23979:

TTTTTCACAAATATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23965-23979
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  215     TTTTTCACAAATATT  229
               |||||||||||||||
Sbjct  969555  TTTTTCACAAATATT  969569
```

3.1.474 NC_045512.2 SARS-Cov-2 17362-17376:

ATTTCAATGGCCACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17362-17376
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  612      ATTTCAATGGCCACA  626
                |||||||||||||||
Sbjct  1523298  ATTTCAATGGCCACA  1523312
```

3.1.475 NC_045512.2 SARS-Cov-2 9412-9437:

TGGTGGTATTGTAGCTATCGTAGTAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9412-9437
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 22/26 (85%), Gaps = 0/26 (0%)
 Strand=Plus/Plus
Query  662      TGGTGGTATTGTAGCTATCGTAGTAA  687
                |||||||||||| | ||| |||| ||
Sbjct  1077771  TGGTGGTATTGTTGGTATTGTAGAAA  1077796
```

3.1.476 NC_045512.2 SARS-Cov-2 1116-1133:

TTCAACCAAGGGTTGAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1116-1133
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  366      TTCAACCAAGGGTTGAAA  383
                ||||||||||||||| ||
Sbjct  1356270  TTCAACCAAGGGTTGCAA  1356287
```

3.1.477 NC_045512.2 SARS-Cov-2 7192-7219:

TACCATTTCATCTTTTAAATGGGATTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7192-7219
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 23/28 (82%), Gaps = 0/28 (0%)
 Strand=Plus/Minus
Query  442      TACCATTTCATCTTTTAAATGGGATTTA  469
                || ||||||||||| || | | ||||||
Sbjct  1288375  TAACATTTCATCTTATATAGGTGATTTA  1288348
```

3.1.478 NC_045512.2 SARS-Cov-2 12170-12207:

GCTAATGGTGATTCTGAAGTTGTTCTTAAAAAGTTGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12170-12207
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 30/38 (79%), Gaps = 3/38 (8%)
 Strand=Plus/Minus
Query  420      GCTAATGGTGATTCTGAAGTTGTTCTTAAAAAGTTGAA  457
                ||||||| ||   |||| | ||||||||||||  ||||
Sbjct  1289682  GCTAATGTTG---CTGAGGGTGTTCTTAAAAAAGTGAA  1289648
```

3.1.479 NC_045512.2 SARS-Cov-2 6333-6348:

ATTCGTTTGATGTACT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6333-6348
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  583     ATTCGTTTGATGTACT  598
                ||||||||||||||||
Sbjct  946141  ATTCGTTTGATGTACT  946126
```

3.1.480 NC_045512.2 SARS-Cov-2 23799-23816:

CAACTGAATGCAGCAATC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23799-23816
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  49      CAACTGAATGCAGCAATC  66
                |||||| ||||||||||
Sbjct  769165  CAACTGTATGCAGCAATC  769182
```

3.1.481 NC_045512.2 SARS-Cov-2 2884-2903:

TGTTGTGGCAGATGCTGTCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2884-2903
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  134    TGTTGTGGCAGATGCTGTCA  153
               |||||||||||||| | |||
Sbjct  70691  TGTTGTGGCAGATGGTTTCA  70710
```

3.1.482 NC_045512.2 SARS-Cov-2 29722-29735:

CACATTTTCACCGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29722-29735
Score = 26.5 bits (28),  Expect = 9.5
 Identities = 14/14 (100%), Gaps = 0/14 (0%)
```

```
 Strand=Plus/Plus
Query  272      CACATTTTCACCGA  285
                ||||||||||||||
Sbjct  1977460  CACATTTTCACCGA  1977473
```

3.1.483 NC_045512.2 SARS-Cov-2 2345-2360:

ATTATTGGTGGAGCTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2345-2360
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  595      ATTATTGGTGGAGCTA  610
                ||||||||||||||||
Sbjct  1738631  ATTATTGGTGGAGCTA  1738616
```

3.1.484 NC_045512.2 SARS-Cov-2 17349-17370:

TGTCTTTGATGAAATTTCAATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17349-17370
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/22 (91%), Gaps = 2/22 (9%)
 Strand=Plus/Plus
Query  599     TGTCTTTGATGAAATTTCAATG  620
               ||||||||||||||  ||||||
Sbjct  889896  TGTCTTTGATGAAA--TCAATG  889915
```

3.1.485 NC_045512.2 SARS-Cov-2 20629-20653:

CATGTAGAAACATTTTACCCAAAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20629-20653
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Plus
Query  879      CATGTAGAAACATTTTACCCAAAAT  903
                ||| || ||||||||||  |||||
Sbjct  2146343  CATCTAAAAACATTTTACAAAAAAT  2146367
```

3.1.486 NC_045512.2 SARS-Cov-2 17385-17400:

TTTGAGTGTTGTCAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17385-17400
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  635      TTTGAGTGTTGTCAAT  650
                ||||||||||||||||
Sbjct  1550969  TTTGAGTGTTGTCAAT  1550954
```

3.1.487 NC_045512.2 SARS-Cov-2 3668-3683:

TATGAAAATTTTAATC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3668-3683
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  918      TATGAAAATTTTAATC  933
                ||||||||||||||||
Sbjct  1468174  TATGAAAATTTTAATC  1468159
```

3.1.488 NC_045512.2 SARS-Cov-2 29550-29563:

CAAGGCAGATGGGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29550-29563
Score = 26.5 bits (28),  Expect = 9.5
 Identities = 14/14 (100%), Gaps = 0/14 (0%)
 Strand=Plus/Plus
Query  100     CAAGGCAGATGGGC  113
               ||||||||||||||
Sbjct  605674  CAAGGCAGATGGGC  605687
```

3.1.489 NC_045512.2 SARS-Cov-2 5962-5984:

TTATAAGAAAGACAATTCTTATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5962-5984
Score = 33.7 bits (36),  Expect = 0.15
 Identities = 21/23 (91%), Gaps = 0/23 (0%)
 Strand=Plus/Plus
Query  212     TTATAAGAAAGACAATTCTTATT  234
                ||||||||  ||||||||||||
Sbjct  859158  TTATAAGATGGACAATTCTTATT  859180
```

3.1.490 NC_045512.2 SARS-Cov-2 7919-7933:

TCATCTGCAAAATCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7919-7933
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  169      TCATCTGCAAAATCA  183
                 |||||||||||||||
Sbjct  1501868  TCATCTGCAAAATCA  1501882
```

3.1.491 NC_045512.2 SARS-Cov-2 21951-22005:

TCTGTGAATTTCAATTTTGTAATGATCCATTTTTGGGTGTTTATTACCACAAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21947-22005
Score = 33.7 bits (36),  Expect = 0.15
 Identities = 44/59 (75%), Gaps = 3/59 (5%)
 Strand=Plus/Minus
Query  197      AAAGTCTGTGAATTTCAATTTTGTAATGATCCATTTTTGGGTGTTTATTACCACAAAAA  255
                 ||| ||| || ||||  ||||| | |  ||| | | |||| |||||||||| | |||||
Sbjct  1705768  AAATTCTATGCATTTGGATTTTCTGA--ATCGAATGTTGG-TGTTTATTACAATAAAAA  170571


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21951-22005
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 41/55 (75%), Gaps = 3/55 (5%)
 Strand=Plus/Minus
Query  1        TCTGTGAATTTCAATTTTGTAATGATCCATTTTTGGGTGTTTATTACCACAAAAA  55
                 ||| || ||||  ||||| | |  ||| | | |||| |||||||||| | |||||
```

```
Sbjct  1705764  TCTATGCATTTGGATTTTCTGA--ATCGAATGTTGG-TGTTTATTACAATAAAAA  1705713
```

3.1.492 NC_045512.2 SARS-Cov-2 21999-22013:

ACAAAAACAACAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21999-22013
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  249      ACAAAAACAACAAAA  263
                ||||||||||||||
Sbjct  1148897  ACAAAAACAACAAAA  1148883
```

3.1.493 NC_045512.2 SARS-Cov-2 20947-20969:

GATTCAGATCTTAATGACTTTGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20947-20969
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Plus
Query  197     GATTCAGATCTTAATGACTTTGT  219
                ||| ||||| | ||||||||||
Sbjct  834802  GATGCAGATATCAATGACTTTGT  834824
```

3.1.494 NC_045512.2 SARS-Cov-2 10027-10050:

AACCTCT—ATCACCTCAGCTGTTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10027-10050
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 23/27 (85%), Gaps = 3/27 (11%)
 Strand=Plus/Plus
Query  277      AACCTCT---ATCACCTCAGCTGTTTT  300
                |||||||   |||| ||||||||||||
Sbjct  1479078  AACCTCTGCCATCAACTCAGCTGTTTT  1479104
```

3.1.495 NC_045512.2 SARS-Cov-2 575-592:

CTTGGTGTCCTTGTCCCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  575-592
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  125      CTTGGTGTCCTTGTCCCT  142
                ||||||||||||||||||
Sbjct  1788767  CTTGGTATCCTTGTCCCT  1788750
```

3.1.496 NC_045512.2 SARS-Cov-2 20876-20905:

GTTCTGATAAAGGAGTTGCACCAGGTACAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20876-20905
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 25/30 (83%), Gaps = 0/30 (0%)
 Strand=Plus/Plus
Query  126     GTTCTGATAAAGGAGTTGCACCAGGTACAG  155
               || ||||||||||||||  |||| | ||||
Sbjct  988422  GTGCTGATAAAGGAGTTTTACCATGGACAG  988451
```

3.1.497 NC_045512.2 SARS-Cov-2 23166-23194:

AAAACAAATGTGT-CAATTTCAACTTCAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23166-23194
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 26/30 (87%), Gaps = 2/30 (7%)
 Strand=Plus/Minus
Query  416     AAAACAAATGTGT-CAATTTCAACTTCAAT  444
               ||| |||| |||| | ||||||||||||||
Sbjct  700818  AAATCAAA-GTGTACTATTTCAACTTCAAT  700790
```

3.1.498 NC_045512.2 SARS-Cov-2 21188-21203:

ATGCTGATCTTTATAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21188-21203
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  438      ATGCTGATCTTTATAA  453
                ||||||||||||||||
Sbjct  1060251  ATGCTGATCTTTATAA  1060266
```

3.1.499 NC_045512.2 SARS-Cov-2 3188-3202:

CAAGAAGAAGATTGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3188-3202
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  438     CAAGAAGAAGATTGG  452
                |||||||||||||||
Sbjct  377976  CAAGAAGAAGATTGG  377990
```

3.1.500 NC_045512.2 SARS-Cov-2 22282-22299:

TTTACTTGCTTTACATAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22282-22299
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  532    TTTACTTGCTTTACATAG  549
              |||||||||||||||| ||
Sbjct  60014  TTTACTTGCTTTACAGAG  60031
```

3.1.501 NC_045512.2 SARS-Cov-2 9784-9798:

TACTTTTGAAGAAGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  9784-9798
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
```

```
 Strand=Plus/Minus
Query  34      TACTTTTGAAGAAGC  48
               ||||||||||||||
Sbjct  961524  TACTTTTGAAGAAGC  961510
```

3.1.502 NC_045512.2 SARS-Cov-2 4192-4211:

TACTGAAATGCTAGCGAAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4192-4211
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  442     TACTGAAATGCTAGCGAAAG  461
               |||||||||||| |||||||
Sbjct  543439  TACTGAAATGCTTGCGAAAG  543458
```

3.1.503 NC_045512.2 SARS-Cov-2 20876-20898:

GTTCTGATAAAGGAGTTGCACCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20876-20898
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Plus
Query  976     GTTCTGATAAAGGAGTTGCACCA  998
               || ||||||||||||||  ||||
Sbjct  988422  GTGCTGATAAAGGAGTTTTACCA  988444
```

3.1.504 NC_045512.2 SARS-Cov-2 24789-24803:

CAACTGCTCCTGCCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24789-24803
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  39      CAACTGCTCCTGCCA  53
               |||||||||||||||
Sbjct  829404  CAACTGCTCCTGCCA  829390
```

3.1.505 NC_045512.2 SARS-Cov-2 16312-16326:

TGTTGTAAATGCTGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16312-16326
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  562     TGTTGTAAATGCTGT  576
               |||||||||||||||
Sbjct  761877  TGTTGTAAATGCTGT  761863
```

3.1.506 NC_045512.2 SARS-Cov-2 3393-3417:

CAGACATTGTGGAAGAAGCTAAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3393-3417
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 22/25 (88%), Gaps = 0/25 (0%)
 Strand=Plus/Minus
Query  643      CAGACATTGTGGAAGAAGCTAAAAA  667
                || ||||||  |||||||||||||
Sbjct  1462718  CAAACATTGAAGAAGAAGCTAAAAA  1462694
```

3.1.507 NC_045512.2 SARS-Cov-2 10137-10160:

ACGGTCTTTGGCTTGATGACGTAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10137-10160
Score = 35.6 bits (38),  Expect = 0.042
 Identities = 22/24 (92%), Gaps = 0/24 (0%)
 Strand=Plus/Minus
Query  387     ACGGTCTTTGGCTTGATGACGTAG  410
               |||||| |||||||||||| ||||
Sbjct  435478  ACGGTCATTGGCTTGATGAAGTAG  435455
```

3.1.508 NC_045512.2 SARS-Cov-2 29704-29717:

AGGACTTGAAAGAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29698-29717
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  948      TTAGGGAGGACTTGAAAGAG  967
                |||  | ||||||||||||||
Sbjct  1129481  TTATGAAGGACTTGAAAGAG  1129462


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29704-29717
Score = 26.5 bits (28),  Expect = 4.0
 Identities = 14/14 (100%), Gaps = 0/14 (0%)
 Strand=Plus/Minus
Query  4        AGGACTTGAAAGAG  17
                ||||||||||||||
Sbjct  1129475  AGGACTTGAAAGAG  1129462
```

3.1.509 NC_045512.2 SARS-Cov-2 28224-28242:

TATCATGACGTTCGTGTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28224-28242
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  474      TATCATGACGTTCGTGTTG  492
                ||||||| ||||||||||||
Sbjct  1233387  TATCATGGCGTTCGTGTTG  1233405
```

3.1.510 NC_045512.2 SARS-Cov-2 4782-4802:

CACTTGCTGGTTCCTATAAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4782-4802
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  32       CACTTGCTGGTTCCTATAAAG  52
                ||||||||||||||  ||||
```

```
Sbjct  1528244  CACTTGCTGGTTCCTGCAAAG  1528264
```

3.1.511 NC_045512.2 SARS-Cov-2 23142-23160:

CTAA-AAAGTCTACTAATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23142-23160
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 19/20 (95%), Gaps = 1/20 (5%)
 Strand=Plus/Plus
Query  392      CTAA-AAAGTCTACTAATTT  410
                ||||  ||||||||||||||
Sbjct  1714345  CTAAGAAAGTCTACTAATTT  1714364
```

3.1.512 NC_045512.2 SARS-Cov-2 29432-29446:

AAGAAACAGCAAACT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29432-29446
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  682      AAGAAACAGCAAACT  696
                |||||||||||||||
Sbjct  1839442  AAGAAACAGCAAACT  1839456
```

3.1.513 NC_045512.2 SARS-Cov-2 6311-6325:

ACAAAACCAGTTGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6311-6325
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  561     ACAAAACCAGTTGAA  575
               |||||||||||||||
Sbjct  663710  ACAAAACCAGTTGAA  663724
```

3.1.514 NC_045512.2 SARS-Cov-2 11987-12006:

TTTGAAAAAATGGTTTCACT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11987-12006
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  237      TTTGAAAAAATGGTTTCACT  256
                ||||  ||||||||||| |||
Sbjct  1687849  TTTGGAAAAATGGTTTGACT  1687868
```

3.1.515 NC_045512.2 SARS-Cov-2 24487-24501:

TGTTTTAAATGATAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  24487-24501
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  737      TGTTTTAAATGATAT  751
                |||||||||||||||
Sbjct  1052823  TGTTTTAAATGATAT  1052837
```

3.1.516 NC_045512.2 SARS-Cov-2 2220-2234:

TCTCAACCTGTGCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2220-2234
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  470     TCTCAACCTGTGCTT  484
                |||||||||||||||
Sbjct  454230  TCTCAACCTGTGCTT  454216
```

3.1.517 NC_045512.2 SARS-Cov-2 4734-4751:

TTACTTCTTCTTCTAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4734-4751
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  934     TTACTTCTTCTTCTAAAA  951
               |||||||||||| |||||
Sbjct  969957  TTACTTCTTCTTTTAAAA  969940
```

3.1.518 NC_045512.2 SARS-Cov-2 13207-13221:

CAATATGGATCAAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13207-13221
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  457      CAATATGGATCAAGA  471
                |||||||||||||||
Sbjct  1072160  CAATATGGATCAAGA  1072174
```

3.1.519 NC_045512.2 SARS-Cov-2 13540-13557:

GCTTTTGACATCTACAAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13540-13557
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  790      GCTTTTGACATCTACAAT  807
                |||||||||| ||||||
Sbjct  1709863  GCTTTTGACATATACAAT  1709846
```

3.1.520 NC_045512.2 SARS-Cov-2 13085-13109:

GTAGATGCTGCTAAAGCTTACAAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13085-13109
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
```

```
 Strand=Plus/Plus
Query  335      GTAGATGCTGCTAAAGCTTACAAAG  359
                 |||| ||||||||||  || ||||
Sbjct  2120013  GTAGGTGCTGCTAAAGGGTATAAAG  2120037
```

3.1.521 NC_045512.2 SARS-Cov-2 7247-7264:

TTTTTGGCATATATTCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7247-7264
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  497      TTTTTGGCATATATTCTT  514
                 |||||| ||||||||||
Sbjct  2065685  TTTTTGCCATATATTCTT  2065702
```

3.1.522 NC_045512.2 SARS-Cov-2 17379-17416:

TTATGATTTGAGTGTTGTCAATGCCAGATTACGTGCTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17379-17416
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 30/38 (79%), Gaps = 1/38 (3%)
 Strand=Plus/Plus
Query  629     TTATGATTTGAGTGTTGTCAATGCCAGATTACGTGCTA  666
                |||||||||||||| |  ||| | || | || ||||||
Sbjct  544290  TTATGATTTGAGTGAT-CCAAGGTCAAAATAAGTGCTA  544326
```

3.1.523 NC_045512.2 SARS-Cov-2 7537-7554:

AACTATTGTTAATGGTGT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7537-7554
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  787      AACTATTGTTAATGGTGT  804
                 ||| ||||||||||||
Sbjct  1370704  AACCATTGTTAATGGTGT  1370687
```

3.1.524 NC_045512.2 SARS-Cov-2 1352-1369:

AATGCTGTTGTTAAAATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1352-1369
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  602      AATGCTGTTGTTAAAATT  619
                || ||||||||||||||
Sbjct  1277306  AAGGCTGTTGTTAAAATT  1277323
```

3.1.525 NC_045512.2 SARS-Cov-2 6871-6922:

TGTTAAGAGTGTCGGTA——AATTTTGTCTAGAGGCTTCATTTAATTATTTGAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6871-6922
Score = 35.6 bits (38),  Expect = 0.042
 Identities = 43/60 (72%), Gaps = 8/60 (13%)
 Strand=Plus/Plus
Query  121     TGTTAAGAGTGTCGGTA--------AATTTTGTCTAGAGGCTTCATTTAATTATTTGAAG  172
               ||||| ||||||| |||        |||||||||| ||  ||| || ||| || |||||
Sbjct  486268  TGTTACGAGTGTCTGTATTGGAAAAAATTTTGTCTATAGAATTCTTTAAATGATATGAAG  486327
```

3.1.526 NC_045512.2 SARS-Cov-2 7590-7607:

AAGGCTTTTGCAAACTAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7590-7607
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  840     AAGGCTTTTGCAAACTAC  857
               |||||||||| ||||||
Sbjct  589198  AAGGCTTTTGCTAACTAC  589215
```

3.1.527 NC_045512.2 SARS-Cov-2 1785-1804:

GTAATTTTAAAGTTACAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1785-1804
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  35       GTAATTTTAAAGTTACAAAA  54
                ||||||||||| | ||||||
Sbjct  1382620  GTAATTTTAAACTAACAAAA  1382601
```

3.1.528 NC_045512.2 SARS-Cov-2 29812-29824:

AAAATTAATTTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29812-29824
Score = 24.7 bits (26),  Expect = 6.3
 Identities = 13/13 (100%), Gaps = 0/13 (0%)
 Strand=Plus/Plus
Query  12       AAAATTAATTTTA  24
                |||||||||||||
Sbjct  1731924  AAAATTAATTTTA  1731936
```

3.1.529 NC_045512.2 SARS-Cov-2 19697-19716:

TCATTAATAACACTGTTTAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19697-19716
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  947      TCATTAATAACACTGTTTAC  966
                || ||||||||||||||||
Sbjct  1150549  TCGTTAATAACACTGTTTAC  1150530
```

3.1.530 NC_045512.2 SARS-Cov-2 14843-14874:

AACTACTATTTGTAGTTGAAGTTGTTGATAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14843-14874
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 26/32 (81%), Gaps = 2/32 (6%)
```

```
 Strand=Plus/Minus
Query  93       AACTACTATTTGTAGTTGAAGTTGTTGATAAG  124
                ||| || |||||   ||||| ||||||||||
Sbjct  1570829  AACAACAATTTGC--TTGAAATTGTTGATAAG  1570800
```

3.1.531 NC_045512.2 SARS-Cov-2 20975-20989:

ATGCAGATTCAACTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20975-20989
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  225     ATGCAGATTCAACTT  239
               |||||||||||||||
Sbjct  326457  ATGCAGATTCAACTT  326443
```

3.1.532 NC_045512.2 SARS-Cov-2 14075-14090:

TCAATGGTAACTGGTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14075-14090
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  325     TCAATGGTAACTGGTA  340
               ||||||||||||||||
Sbjct  411003  TCAATGGTAACTGGTA  411018
```

3.1.533 NC_045512.2 SARS-Cov-2 22491-22510:

AAGGAATCTATCAAACTTCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22491-22510
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  741      AAGGAATCTATCAAACTTCT  760
                || ||| ||||||||||||
Sbjct  1240174  AATGAAACTATCAAACTTCT  1240193
```

3.1.534 NC_045512.2 SARS-Cov-2 4360-4374:

AGAAATTCTTGGAAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4352-4374
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 21/23 (91%), Gaps = 1/23 (4%)
 Strand=Plus/Plus
Query  602     GAGAAGCAAGAAATTCTTGGAAC  624
                |||||||||||||  ||  ||||||
Sbjct  190189  GAGAAGCAAGAAA-TCGTGGAAC  190210


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4360-4374
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  610    AGAAATTCTTGGAAC  624
               |||||||||||||||
Sbjct  64390  AGAAATTCTTGGAAC  64404
```

3.1.535 NC_045512.2 SARS-Cov-2 1123-1147:

AAGGGTTGAAAAGAAAAAGCTTGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  1123-1147
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Plus
Query  373     AAGGGTTGAAAAGAAAAAGCTTGAT  397
                ||  ||||||||||  ||  ||||||
Sbjct  464789  AACGGTTGAAAAGAGTAACCTTGAT  464813
```

3.1.536 NC_045512.2 SARS-Cov-2 25744-25765:

ATAAACTTTGTAAGAATAATAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  25744-25765
Score = 28.3 bits (30),  Expect = 6.2
```

```
 Identities = 20/22 (91%), Gaps = 1/22 (5%)
 Strand=Plus/Plus
Query  944     ATAAACTTTGTAAGAATAATAA  965
                |||||  |||  ||||||||||||
Sbjct  522809  ATAAATTTT-TAAGAATAATAA  522829
```

3.1.537 NC_045512.2 SARS-Cov-2 14049-14066:

TGTACTGACATTAGATAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  14049-14066
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  299      TGTACTGACATTAGATAA  316
                 ||||||  ||||||||||
Sbjct  2147245  TGTACTCACATTAGATAA  2147228
```

3.1.538 NC_045512.2 SARS-Cov-2 23711-23732:

AATTTTACTATTAGTGTTACCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  23711-23732
Score = 31.9 bits (34),  Expect = 0.51
 Identities = 20/22 (91%), Gaps = 0/22 (0%)
 Strand=Plus/Minus
Query  961     AATTTTACTATTAGTGTTACCA  982
                ||||||||||| ||| ||||||
Sbjct  543686  AATTTTACTATAAGTCTTACCA  543665
```

3.1.539 NC_045512.2 SARS-Cov-2 27750-27778:

GACAGAATGATTGAACTTTCATTAATTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27750-27778
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 24/29 (83%), Gaps = 0/29 (0%)
 Strand=Plus/Minus
Query  950      GACAGAATGATTGAACTTTCATTAATTGA  978
                 || |||||||||||||  |  | ||||||
Sbjct  1066097  GATAGAATGATTGAACTATAGTAAATTGA  1066069
```

3.1.540 NC_045512.2 SARS-Cov-2 15139-15154:

ACCAATAGACAGTTTC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15139-15154
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  389      ACCAATAGACAGTTTC  404
                ||||||||||||||||
Sbjct  2059879  ACCAATAGACAGTTTC  2059894
```

3.1.541 NC_045512.2 SARS-Cov-2 22314-22334:

CTGGTGATTCTTCTTCAGGTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22314-22334
Score = 34.6 bits (37),  Expect = 0.15
 Identities = 20/21 (95%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  564      CTGGTGATTCTTCTTCAGGTT  584
                |||||||||||||||| ||||
Sbjct  1139623  CTGGTGATTCTTCTTCTGGTT  1139643
```

3.1.542 NC_045512.2 SARS-Cov-2 19701-19716:

TAATAACACTGTTTAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19697-19716
Score = 32.8 bits (35),  Expect = 0.51
 Identities = 19/20 (95%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  947      TCATTAATAACACTGTTTAC  966
                || ||||||||||||||||
Sbjct  1150549  TCGTTAATAACACTGTTTAC  1150530


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  19701-19716
Score = 30.1 bits (32),  Expect = 1.8
```

```
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  1        TAATAACACTGTTTAC  16
                ||||||||||||||||
Sbjct  1150545  TAATAACACTGTTTAC  1150530
```

3.1.543 NC_045512.2 SARS-Cov-2 6110-6129:

AAACCTGCTTCAAGAGAGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  6110-6129
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  360     AAACCTGCTTCAAGAGAGCT  379
                ||| |||||||||||| ||
Sbjct  787435  AAATCTGCTTCAAGAGACCT  787454
```

3.1.544 NC_045512.2 SARS-Cov-2 20255-20270:

ATTTCTTAGAATTAGC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  20255-20270
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  505      ATTTCTTAGAATTAGC  520
                ||||||||||||||||
Sbjct  1439588  ATTTCTTAGAATTAGC  1439603
```

3.1.545 NC_045512.2 SARS-Cov-2 21404-21423:

AATTTCCCCTTAAATTAAGG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21404-21423
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  654     AATTTCCCCTTAAATTAAGG  673
                |||||||||| || |||||
Sbjct  681016  AATTTCCCCTTTAAGTAAGG  681035
```

3.1.546 NC_045512.2 SARS-Cov-2 7338-7352:

TTATTAGTAATTCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  7338-7352
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  588     TTATTAGTAATTCTT  602
               ||||||||||||||
Sbjct  580564  TTATTAGTAATTCTT  580550
```

3.1.547 NC_045512.2 SARS-Cov-2 10409-10431:

AATGGTTCACCATCTGGTGTTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10409-10431
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 20/23 (87%), Gaps = 0/23 (0%)
 Strand=Plus/Minus
Query  659     AATGGTTCACCATCTGGTGTTTA  681
               |||||||||| |||| ||| ||
Sbjct  519445  AATGGTTCACCTTCTGTTGTATA  519423
```

3.1.548 NC_045512.2 SARS-Cov-2 27898-27913:

AATTTCTTGTTTTCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27898-27913
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  148      AATTTCTTGTTTTCTT  163
                ||||||||||||||||
Sbjct  1157056  AATTTCTTGTTTTCTT  1157071
```

3.1.549 NC_045512.2 SARS-Cov-2 29468-29481:

GATTTGGATGATTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29468-29481
Score = 26.5 bits (28),  Expect = 9.5
 Identities = 14/14 (100%), Gaps = 0/14 (0%)
 Strand=Plus/Minus
Query  18      GATTTGGATGATTT  31
               ||||||||||||||
Sbjct  582537  GATTTGGATGATTT  582524


> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  29463-29481
Score = 26.5 bits (28),  Expect = 9.5
 Identities = 17/19 (89%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  13       CTGCAGATTTGGATGATTT  31
                 ||| |||||||||||| ||
Sbjct  1156350  CTGAAGATTTGGATGAATT  1156332
```

3.1.550 NC_045512.2 SARS-Cov-2 27309-27326:

AATTAAAAATTTATCTAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  27309-27326
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  559     AATTAAAAATTTATCTAA  576
               || ||||||||||||||
Sbjct  307210  AACTAAAAATTTATCTAA  307193
```

3.1.551 NC_045512.2 SARS-Cov-2 28850-28867:

AGTTCAAGAAATTCAACT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  28850-28867
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  100     AGTTCAAGAAATTCAACT  117
               |||||||||||| ||||
```

```
Sbjct  705563  AGTTCAAGAAATTGAACT  705546
```

3.1.552 NC_045512.2 SARS-Cov-2 3076-3090:

AGAAGAAGAGTTTGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3076-3090
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  326    AGAAGAAGAGTTTGA  340
              |||||||||||||||
Sbjct  25512  AGAAGAAGAGTTTGA  25498
```

3.1.553 NC_045512.2 SARS-Cov-2 12707-12725:

GCACTACGACAGATGTCTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  12707-12725
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Plus
Query  957      GCACTACGACAGATGTCTT  975
                ||||||||||||| ||||
Sbjct  1459252  GCACTACGACAGATTTCTT  1459270
```

3.1.554 NC_045512.2 SARS-Cov-2 15972-15987:

AGATGATATCGTAAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15972-15987
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Minus
Query  222      AGATGATATCGTAAAA  237
                ||||||||||||||||
Sbjct  1673314  AGATGATATCGTAAAA  1673299
```

3.1.555 NC_045512.2 SARS-Cov-2 22802-22819:

CAAACTGGAAAGATTGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22802-22819
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  52       CAAACTGGAAAGATTGCT  69
                |||||  ||||||||||||
Sbjct  1455761  CAAACCGGAAAGATTGCT  1455778
```

3.1.556 NC_045512.2 SARS-Cov-2 11129-11146:

TCTGCTTTTGCAATGATG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11129-11146
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Minus
Query  379     TCTGCTTTTGCAATGATG  396
                |||||||||||||| |||
Sbjct  260394  TCTGCTTTTGCAATTATG  260377
```

3.1.557 NC_045512.2 SARS-Cov-2 17086-17100:

CCTGGTACTGGTAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17086-17100
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  986     CCTGGTACTGGTAAG  1000
                |||||||||||||||
Sbjct  420220  CCTGGTACTGGTAAG  420206
```

3.1.558 NC_045512.2 SARS-Cov-2 10737-10756:

ATGACTTTAACCTTGTGGCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  10737-10756
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  937      ATGACTTTAACCTTGTGGCT  956
                ||||||||||||| ||| ||
Sbjct  1056512  ATGACTTTAACCTGGTGACT  1056531
```

3.1.559 NC_045512.2 SARS-Cov-2 5815-5829:

TGCTTTACTTACAAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5815-5829
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  65      TGCTTTACTTACAAA  79
               |||||||||||||||
Sbjct  880384  TGCTTTACTTACAAA  880370
```

3.1.560 NC_045512.2 SARS-Cov-2 3851-3865:

GAAAAGCAAGTTGAA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3851-3865
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  101      GAAAAGCAAGTTGAA  115
                |||||||||||||||
Sbjct  1051300  GAAAAGCAAGTTGAA  1051314
```

3.1.561 NC_045512.2 SARS-Cov-2 21464-21487:

ATATGATTTTATCTCTTCTTAGTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  21464-21487
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 21/24 (88%), Gaps = 0/24 (0%)
```

```
 Strand=Plus/Minus
Query  714     ATATGATTTTATCTCTTCTTAGTA  737
                ||||  |||| ||||||||||||
Sbjct  530816  ATATATTTTTGTCTCTTCTTAGTA  530793
```

3.1.562 NC_045512.2 SARS-Cov-2 3029-3049:

TGTTCTTTCTACCCTCCAGAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3029-3049
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  279     TGTTCTTTCTACCCTCCAGAT  299
                |||||||||||| || |||||
Sbjct  994273  TGTTCTTTCTACACTTCAGAT  994293
```

3.1.563 NC_045512.2 SARS-Cov-2 13681-13701:

CAACATGAAGAAACAATTTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  13681-13701
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 19/21 (90%), Gaps = 0/21 (0%)
 Strand=Plus/Plus
Query  931      CAACATGAAGAAACAATTTAT  951
                || |||||| ||||||||||
Sbjct  2131483  CATCATGAAAAAACAATTTAT  2131503
```

3.1.564 NC_045512.2 SARS-Cov-2 3804-3818:

AAAATCTCTATGACA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  3804-3818
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  54       AAAATCTCTATGACA  68
                |||||||||||||||
Sbjct  1612147  AAAATCTCTATGACA  1612133
```

3.1.565 NC_045512.2 SARS-Cov-2 15644-15663:

GAGATGTTGACACAGACTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  15644-15663
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Minus
Query  894      GAGATGTTGACACAGACTTT  913
                ||||||||||| |||| |||
Sbjct  1361161  GAGATGTTGACTCAGAATTT  1361142
```

3.1.566 NC_045512.2 SARS-Cov-2 16963-16980:

CAAGAGCACTATGTTAGA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16963-16980
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 17/18 (94%), Gaps = 0/18 (0%)
 Strand=Plus/Plus
Query  213     CAAGAGCACTATGTTAGA  230
                ||||| ||||||||||||
Sbjct  749733  CAAGATCACTATGTTAGA  749750
```

3.1.567 NC_045512.2 SARS-Cov-2 4754-4768:

CCTGAAGAACATTTT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4754-4768
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  4        CCTGAAGAACATTTT  18
                |||||||||||||||
Sbjct  1702951  CCTGAAGAACATTTT  1702937
```

3.1.568 NC_045512.2 SARS-Cov-2 4782-4796:

CACTTGCTGGTTCCT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4782-4796
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  982      CACTTGCTGGTTCCT  996
                ||||||||||||||
Sbjct  1528244  CACTTGCTGGTTCCT  1528258
```

3.1.569 NC_045512.2 SARS-Cov-2 2809-2833:

GATTGATAAAGTACTTAATGAGAAG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  2809-2833
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 21/25 (84%), Gaps = 0/25 (0%)
 Strand=Plus/Minus
Query  59       GATTGATAAAGTACTTAATGAGAAG  83
                ||||||||||| ||||  ||| |||
Sbjct  1665811  GATTGATAAAGAACTTTCTGAAAAG  1665787
```

3.1.570 NC_045512.2 SARS-Cov-2 5555-5570:

GGTGTAGAAGCTGTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  5555-5570
Score = 30.1 bits (32),  Expect = 1.8
 Identities = 16/16 (100%), Gaps = 0/16 (0%)
 Strand=Plus/Plus
Query  805      GGTGTAGAAGCTGTTA  820
                ||||||||||||||||
Sbjct  1711183  GGTGTAGAAGCTGTTA  1711198
```

3.1.571 NC_045512.2 SARS-Cov-2 16603-16641:

GCTAACACCTGTACTGAAAGACTCAAGCTTTTTGCAGCA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  16603-16641
Score = 29.2 bits (31),  Expect = 6.2
 Identities = 30/39 (77%), Gaps = 3/39 (8%)
```

```
 Strand=Plus/Plus
Query  853      GCTAACACCTGTACTGAAAGACTCAAGCTTTTTGCAGCA  891
                 ||||  ||| || ||||||||||||   ||||  |||||
Sbjct  1129748  GCTACAACCAGTTCTGAAAGACTCA---TTTTCTCAGCA  1129783
```

3.1.572 NC_045512.2 SARS-Cov-2 26086-26104:

ATCTACAATAAAATTGTTG

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  26086-26104
Score = 31.0 bits (33),  Expect = 1.8
 Identities = 18/19 (95%), Gaps = 0/19 (0%)
 Strand=Plus/Minus
Query  336    ATCTACAATAAAATTGTTG  354
               ||||| ||||||||||||
Sbjct  41030  ATCTAGAATAAAATTGTTG  41012
```

3.1.573 NC_045512.2 SARS-Cov-2 22890-22909:

CTAAGGTTGGTGGTAATTAT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  22890-22909
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 18/20 (90%), Gaps = 0/20 (0%)
 Strand=Plus/Plus
Query  140     CTAAGGTTGGTGGTAATTAT  159
                |||||||||||| || |||
Sbjct  830301  CTAAGGTTGGTGGAAACTAT  830320
```

3.1.574 NC_045512.2 SARS-Cov-2 4740-4754:

CTTCTTCTAAAACAC

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  4740-4754
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  940      CTTCTTCTAAAACAC  954
                 |||||||||||||||
Sbjct  1928562  CTTCTTCTAAAACAC  1928576
```

3.1.575 NC_045512.2 SARS-Cov-2 11174-11188:

TGTTTGTTTTTGTTA

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  11174-11188
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Plus
Query  424      TGTTTGTTTTTGTTA  438
                ||||||||||||||
Sbjct  1158047  TGTTTGTTTTTGTTA  1158061
```

3.1.576 NC_045512.2 SARS-Cov-2 17436-17450:

CGACCCTGCTCAATT

```
> NZ_CP020549.1 Streptococcus pneumoniae strain Hu17 chromosome
Length=2148350
Query = NC_045512.2 SARS-Cov-2  17436-17450
Score = 28.3 bits (30),  Expect = 6.2
 Identities = 15/15 (100%), Gaps = 0/15 (0%)
 Strand=Plus/Minus
Query  986      CGACCCTGCTCAATT  1000
                ||||||||||||||
Sbjct  1323958  CGACCCTGCTCAATT  1323944
```