

COVID-19 subject 431

2021-04-17

The table below provides a summary of subject samples for which sequencing data is available.

The experiments column shows the number of sequencing experiments performed for each specimen.

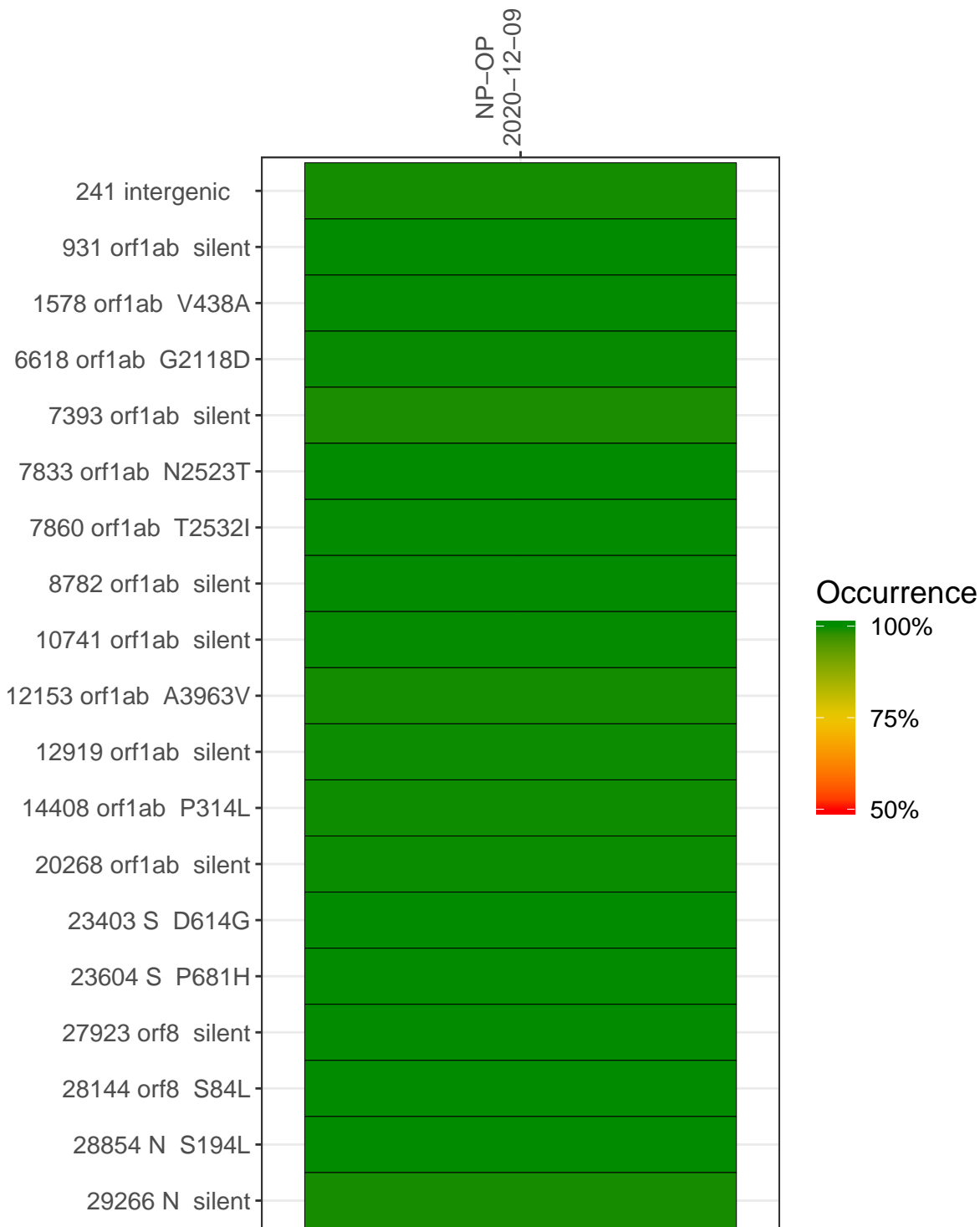
Experiment specific analyses are shown at the end of this report. Lineages are called with the Pangolin software tool (Rambaut et al 2020) for genomes with $> 90\%$ sequence coverage.

Table 1. Sample summary.

Experiment	Type	Genomes	Sample type	Sample date	Largest contig (KD)	Lineage	Reference read coverage	Reference read coverage (≥ 5 reads)
VSP0523	composite	NA	NP-OP	2020-12-09	4.56	NA	82.1%	81.3%
VSP0523-1	single experiment	NA	NP-OP	2020-12-09	4.53	NA	81.8%	80.8%
VSP0523-2	single experiment	NA	NP-OP	2020-12-09	4.63	NA	81.7%	80.9%

Variants shared across samples

The heat map below shows how variants (reference genome /home/everett/projects/SARS-CoV-2-Philadelphia/USA-WA1-2020) are shared across subject samples where the percent variance is colored. Variants are called if a variant position is covered by 5 or more reads, the alternative base is found in > 50% of read pairs and the variant yields a PHRED score > 20. Gray tiles denote positions where the variant was not the major variant or no variants were found. The relative base compositions of each experiment used to calculate tiles are shown in the following plot where the total number of position reads are shown atop of each plot.



NP-OP
2020-12-09

241 intergenic	4493	2528
931 orf1ab silent	4109	1848
1578 orf1ab V438A	1144	544
6618 orf1ab G2118D	13241	6504
7393 orf1ab silent	3924	1861
7833 orf1ab N2523T	5364	2502
7860 orf1ab T2532I	4987	2315
8782 orf1ab silent	3697	1529
10741 orf1ab silent	4148	1848
12153 orf1ab A3963V	14674	6963
12919 orf1ab silent	5326	2474
14408 orf1ab P314L	4123	1973
20268 orf1ab silent	3533	1550
23403 S D614G	6068	2874
23604 S P681H	14192	7108
27923 orf8 silent	9212	4337
28144 orf8 S84L	6315	2644
28854 N S194L	2947	1305
29266 N silent	10474	4665
	VSP0523-1	VSP0523-2

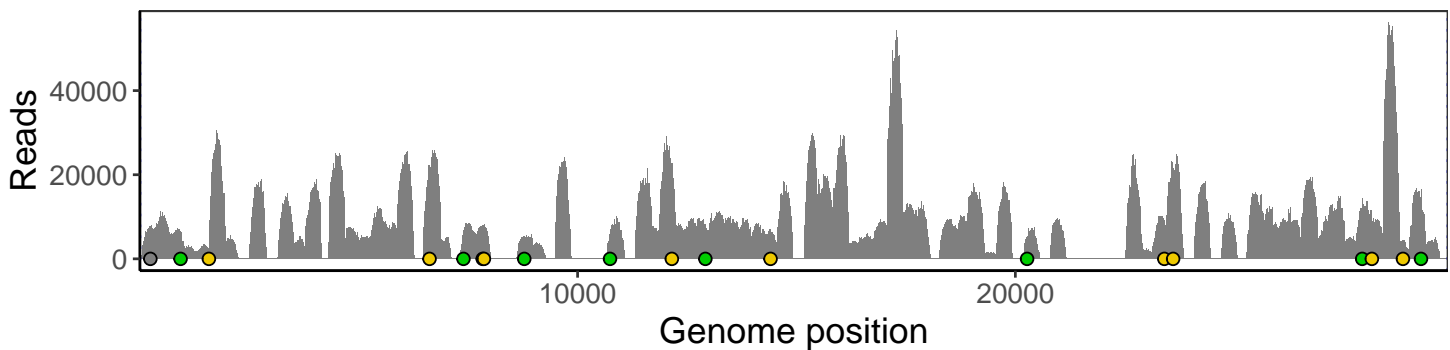
Base change

- Expected
- A
- T
- C
- G
- N
- Ins/Del
- No data

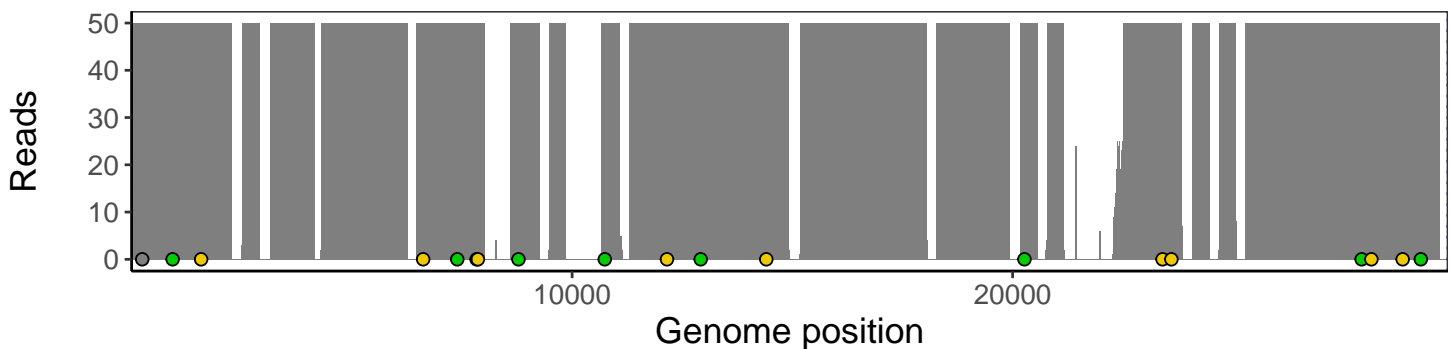
Analyses of individual experiments and composite results

VSP0523 | 2020-12-09 | NP-OP | 431no | composite result

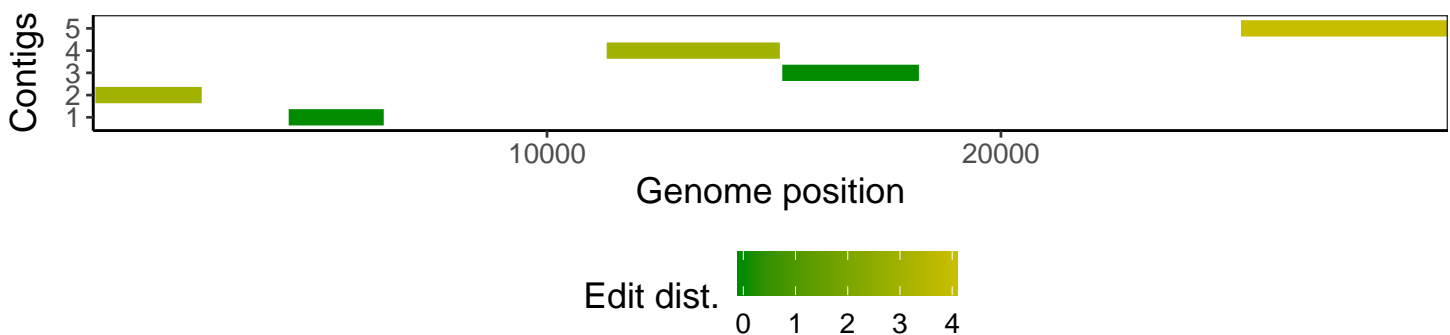
The plot below shows the number of reads covering each nucleotide position in the reference genome. Variants are shown as colored dots along the bottom of the plot and are color coded according to variant types: gray - transgenic, green - silent, gold - missense, red - nonsense, black - indel.



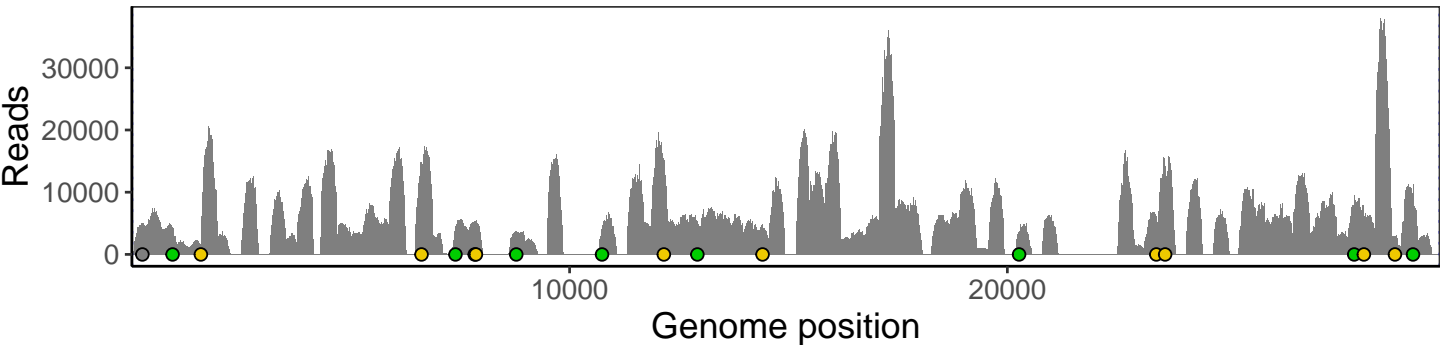
Excerpt from plot above focusing on reads coverage from 0 to 50 NT.



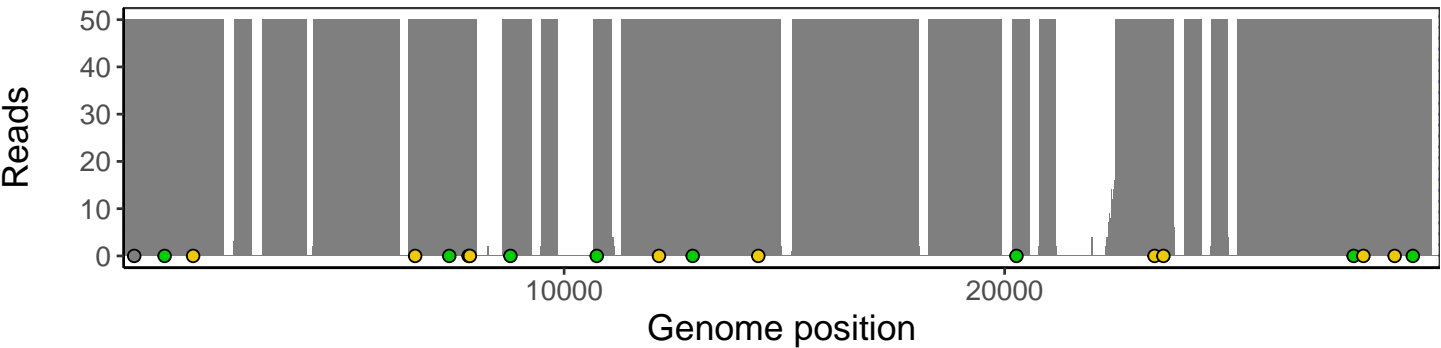
The longest five assembled contigs are shown below colored by their edit distance to the reference genome.



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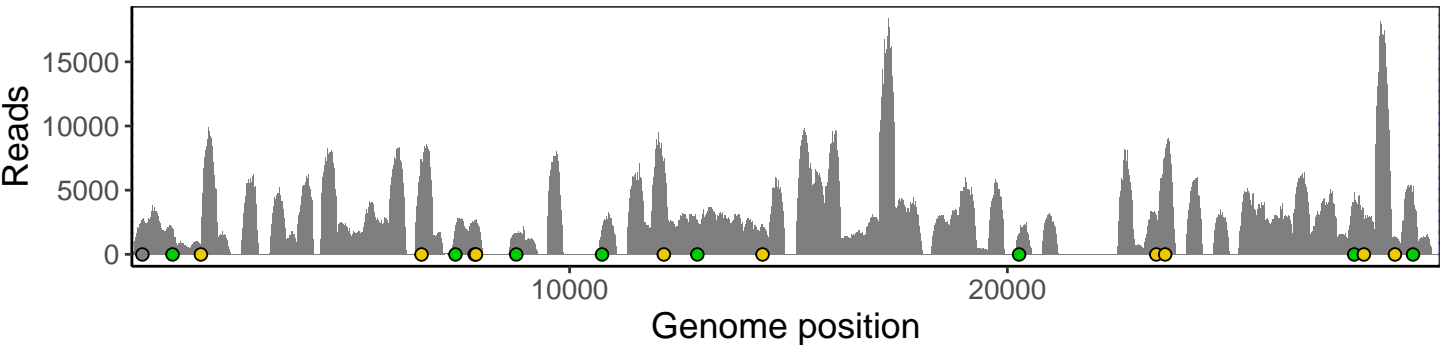
Excerpt from plot above focusing on reads coverage from 0 to 50 NT.



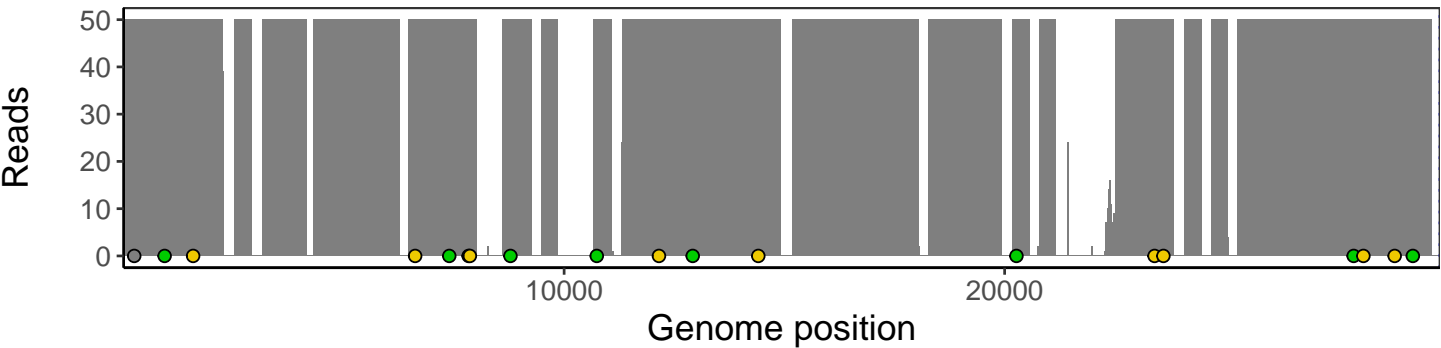
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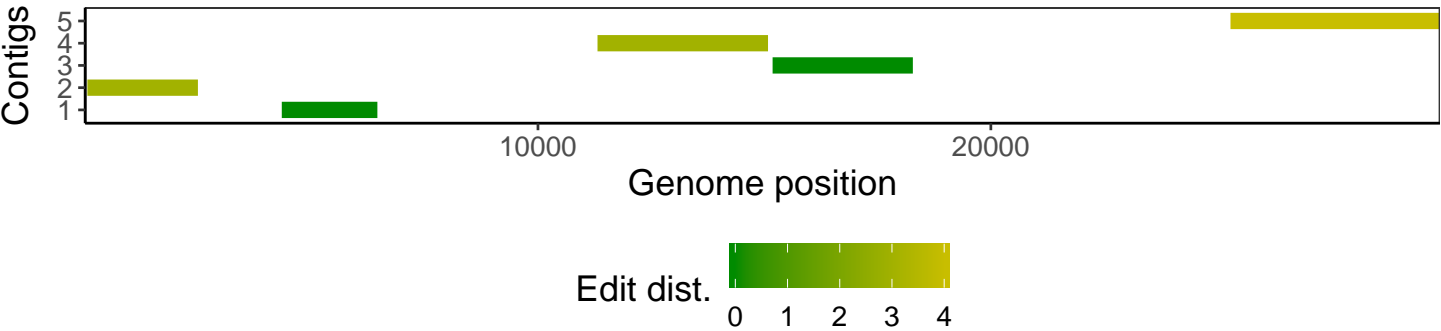
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Excerpt from plot above focusing on reads coverage from 0 to 50 NT.



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Software environment

Software/R package	Version
R	3.4.0
bwa	0.7.17-r1198-dirty
samtools	1.10 Using htlib 1.10
bcftools	1.10.2-34-g1a12af0-dirty Using htlib 1.10.2-57-gf58a6f3
pangolin	2.3.8
genbankr	1.4.0
optparse	1.6.0
forcats	0.3.0
stringr	1.4.0
dplyr	0.8.1
purrr	0.2.5
readr	1.1.1
tidyr	0.8.1
tibble	2.1.2
ggplot2	3.0.0
tidyverse	1.2.1
ShortRead	1.34.2
GenomicAlignments	1.12.2
SummarizedExperiment	1.6.5
DelayedArray	0.2.7
matrixStats	0.54.0
Biobase	2.36.2
Rsamtools	1.28.0
GenomicRanges	1.28.6
GenomeInfoDb	1.12.3
Biostrings	2.44.2
XVector	0.16.0
IRanges	2.10.5
S4Vectors	0.14.7
BiocParallel	1.10.1
BiocGenerics	0.22.1