COVID-19 subject UPHS-0121

2021-05-05

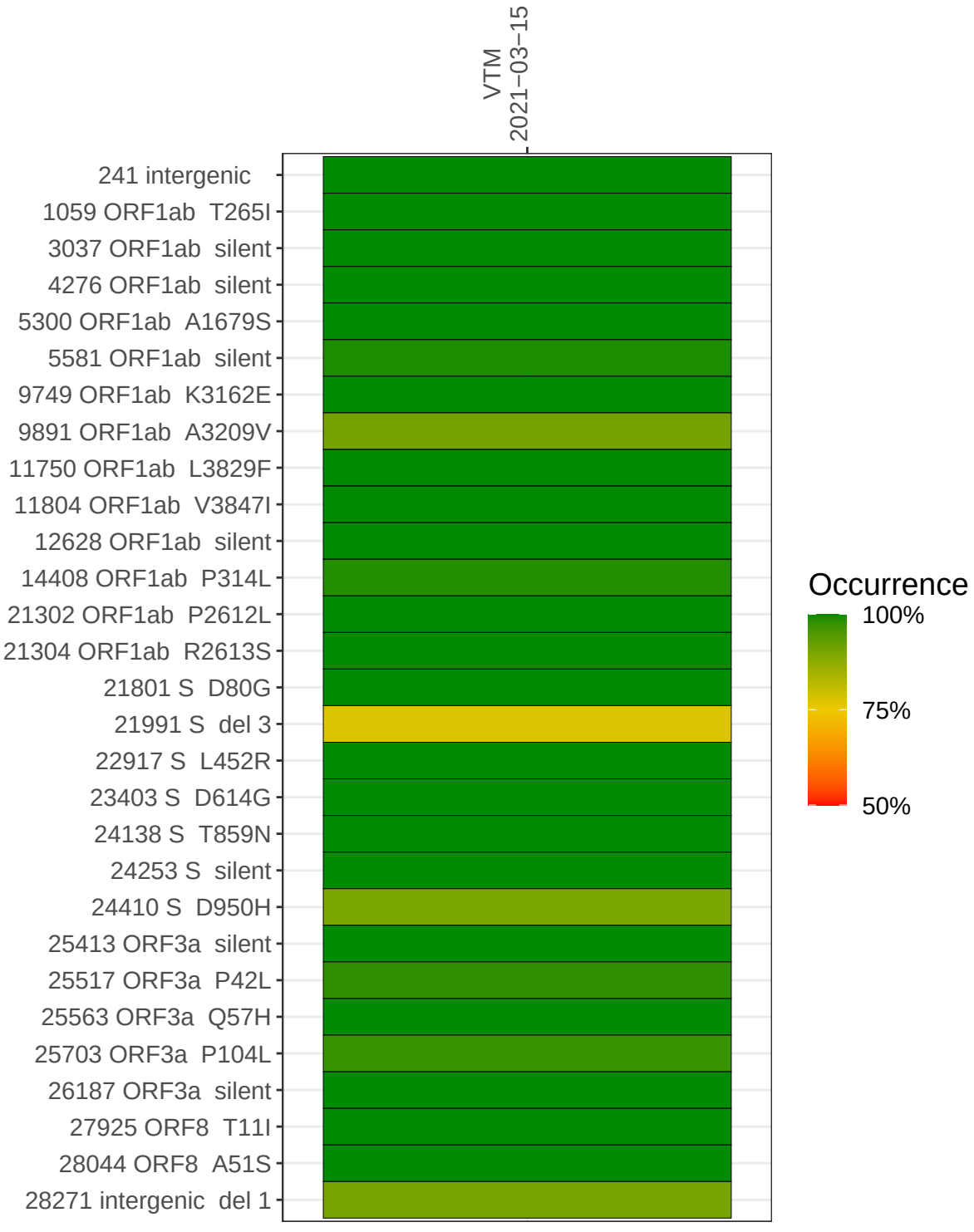
The table below provides a summary of subject samples for which sequencing data is available.
The experiments column shows the number of sequencing experiments performed for each specimen.
Experiment specific analyses are shown at the end of this report. Lineages are called with the Pangolin software tool (Rambaut et al 2020) for genomes with > 90% sequence coverage.

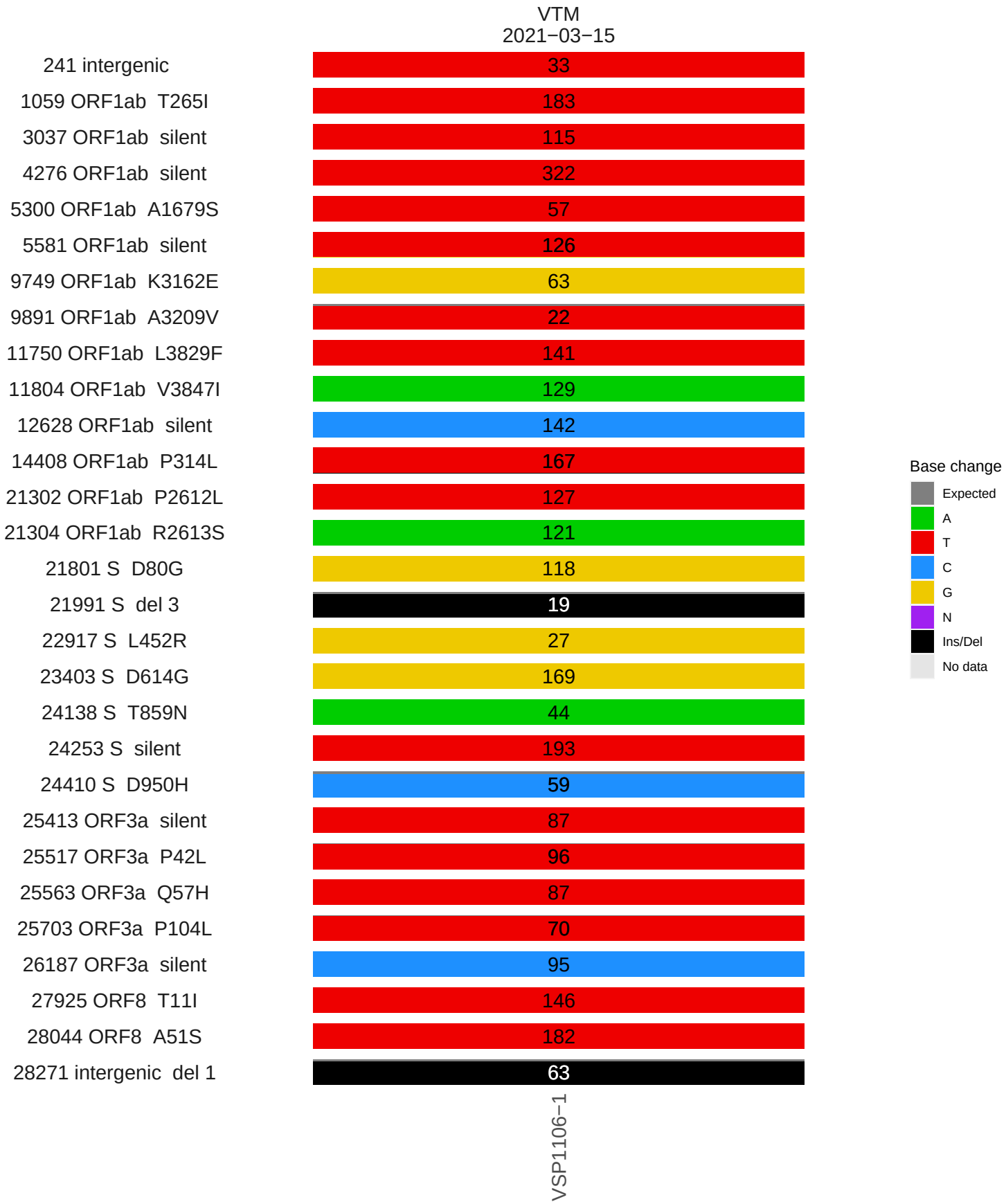
Table 1. Sample summary.

Experiment	Type	Genomes	Sample type	Sample date	Largest contig (KD)	Lineage	Reference read coverage	Reference read coverage (>= 5 reads)
VSP1106-1	single experiment	NA	VTM	2021-03-15	14.97	B.1	98.8%	96.4%

Variants shared across samples

The heat map below shows how variants (reference genome /home/everett/projects/SARS-CoV-2-Philadelphia/Wuhan-Hu-1) 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.

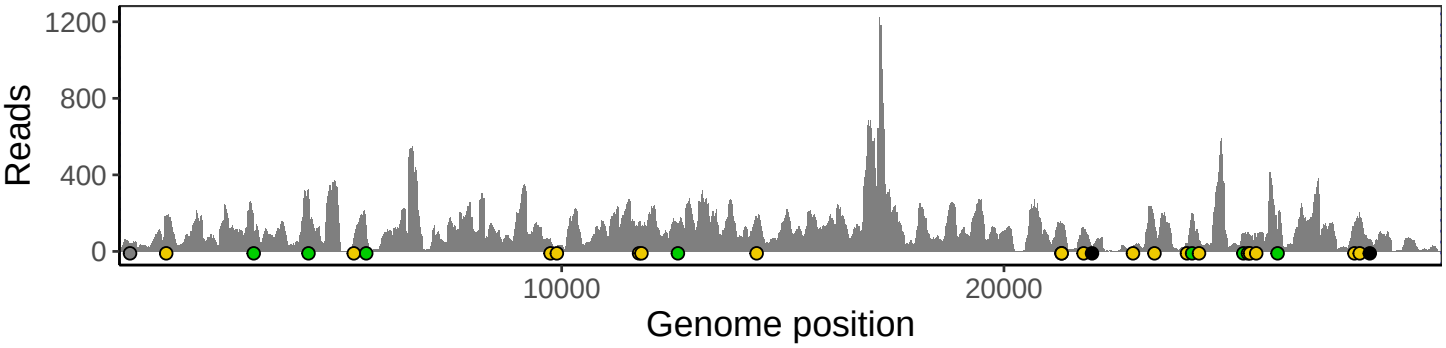



VTM
2021−03−15
241 intergenic
1059 ORF1ab T265I
3037 ORF1ab silent
4276 ORF1ab silent
5300 ORF1ab A1679S
5581 ORF1ab silent
9749 ORF1ab K3162E
9891 ORF1ab A3209V
11750 ORF1ab L3829F
11804 ORF1ab V3847I
12628 ORF1ab silent
14408 ORF1ab P314L
21302 ORF1ab P2612L
21304 ORF1ab R2613S
21801 S D80G
21991 S del 3
22917 S L452R
23403 S D614G
24138 S T859N
24253 S silent
24410 S D950H
25413 ORF3a silent
25517 ORF3a P42L
25563 ORF3a Q57H
25703 ORF3a P104L
26187 ORF3a silent
27925 ORF8 T11I
28044 ORF8 A51S
28271 intergenic del 1
33
183
115
322
57
126
63
22
141
129
142
167
127
121
118
19
27
169
44
193
59
87
96
87
70
95
146
182
63
VSP1106−1
Base change
Expected
A
T
C
G
N
Ins/Del
No data

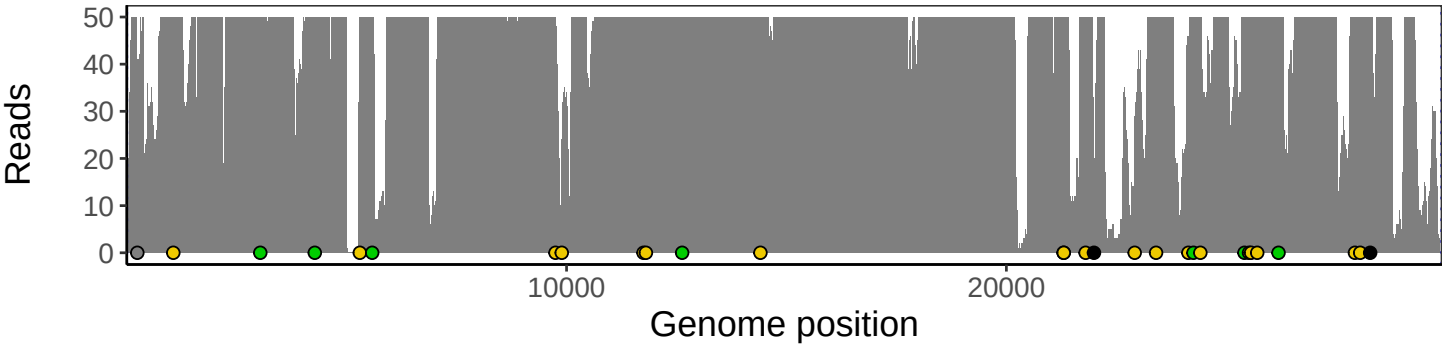
Analyses of individual experiments and composite results

VSP1106-1 | 2021-03-15 | VTM | UPHS-0121 | genomes | single experiment

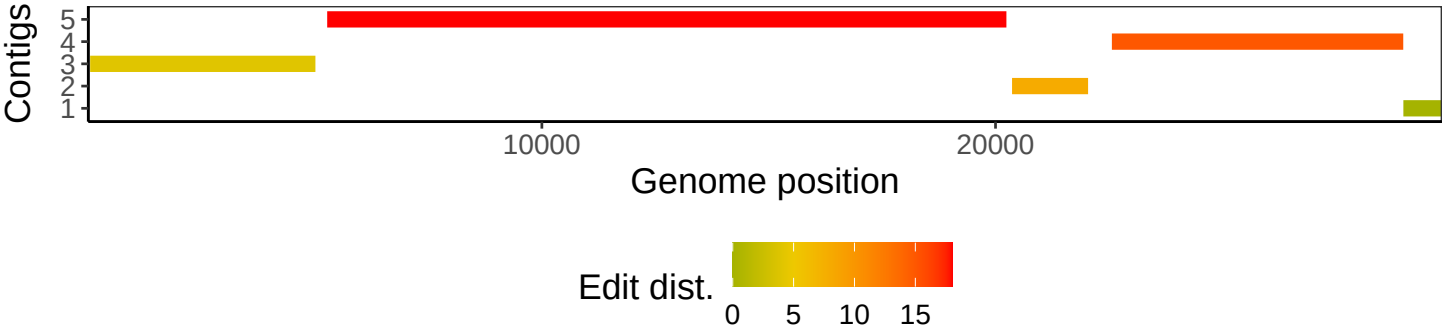
The plot below shows the number of reads covering each nucleotide position in the reference genome. Variants are shown as colored dots along the bottom of the plot and are color coded according by variant types: gray - transgenic, green - silent, gold - missense, red - nonsense, black - indel.



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.



Software environment

Software/R package	Version
R	3.4.0
bwa	0.7.17-r1198-dirty
samtools	1.10 Using htslib 1.10
bcftools	1.10.2-34-g1a12af0-dirty Using htslib 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