COVID-19 subject UPHS-1531

2021-06-23

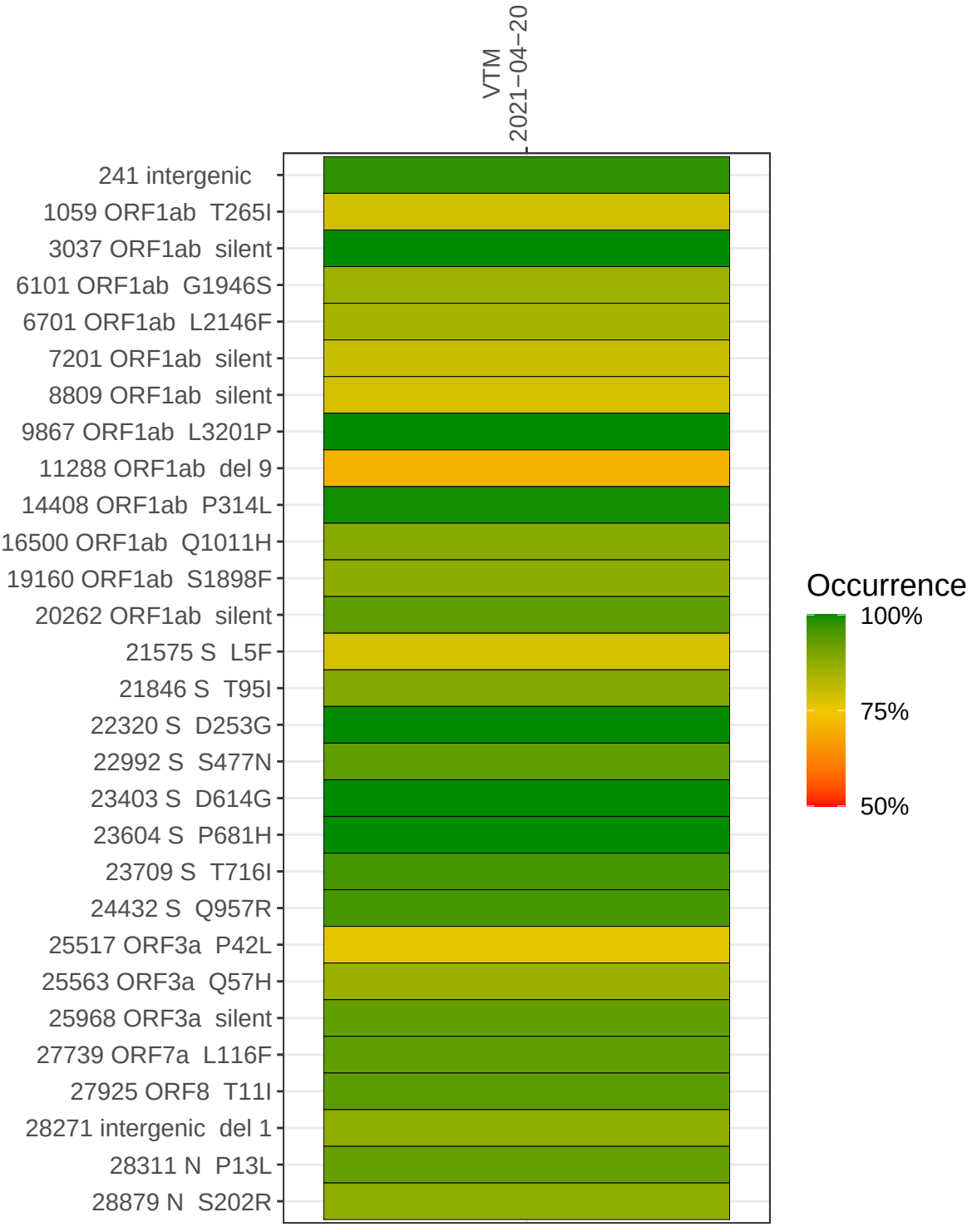
The table below provides a summary of subject samples for which sequencing data is available.
The experiments column shows the number of sequencing experiments performed for each specimen.
Experiment specific analyses are shown at the end of this report. Lineages are called with the Pangolin software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

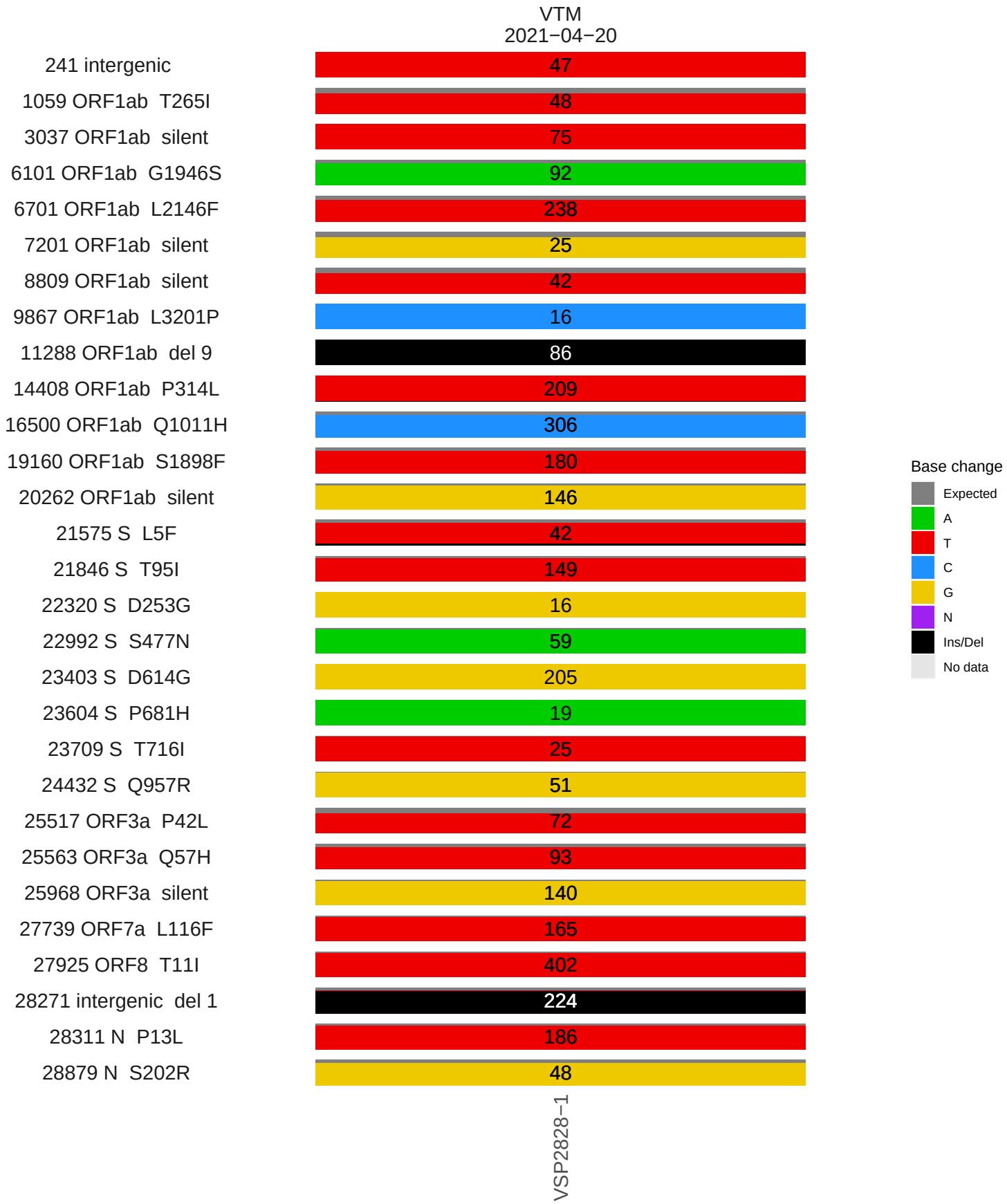
Table 1. Sample summary.

Experiment	Type	Genomes	Sample type	Sample date	Largest contig (KD)	Lineage	Reference read coverage	Reference read coverage (>= 5 reads)
VSP2828-1	single experiment	NA	VTM	2021-04-20	29.78	B.1.526	99.8%	99.2%

Variants shared across samples

The heat map below shows how variants (reference genome /home/common/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.

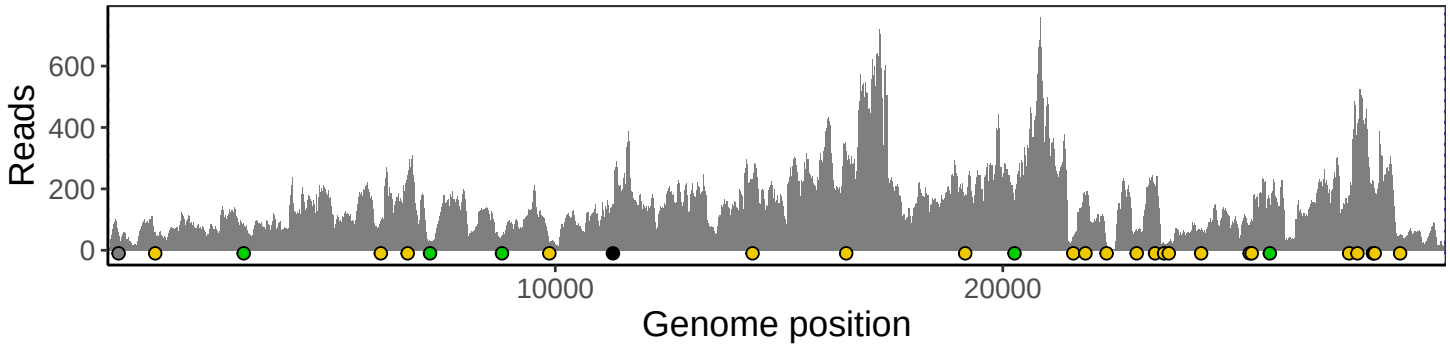



VTM
2021−04−20
241 intergenic
47
1059 ORF1ab T265I
48
3037 ORF1ab silent
75
6101 ORF1ab G1946S
92
6701 ORF1ab L2146F
238
7201 ORF1ab silent
25
8809 ORF1ab silent
42
9867 ORF1ab L3201P
16
11288 ORF1ab del 9
86
14408 ORF1ab P314L
209
16500 ORF1ab Q1011H
306
19160 ORF1ab S1898F
180
20262 ORF1ab silent
146
21575 S L5F
42
21846 S T95I
149
22320 S D253G
16
22992 S S477N
59
23403 S D614G
205
23604 S P681H
19
23709 S T716I
25
24432 S Q957R
51
25517 ORF3a P42L
72
25563 ORF3a Q57H
93
25968 ORF3a silent
140
27739 ORF7a L116F
165
27925 ORF8 T11I
402
28271 intergenic del 1
224
28311 N P13L
186
28879 N S202R
48
VSP2828−1
Base change
Expected
A
T
C
G
N
Ins/Del
No data

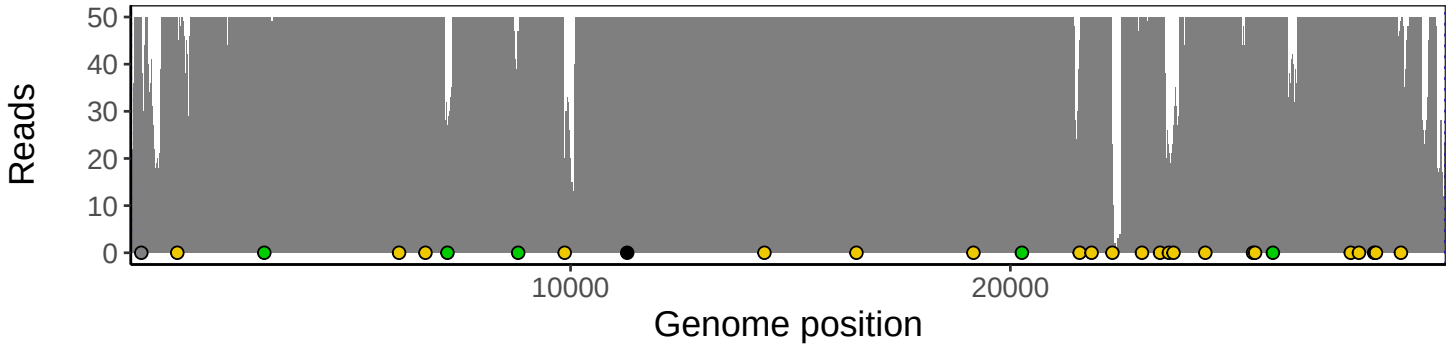
Analyses of individual experiments and composite results

VSP2828-1 | 2021-04-20 | VTM | UPHS-1531 | genomes | single experiment

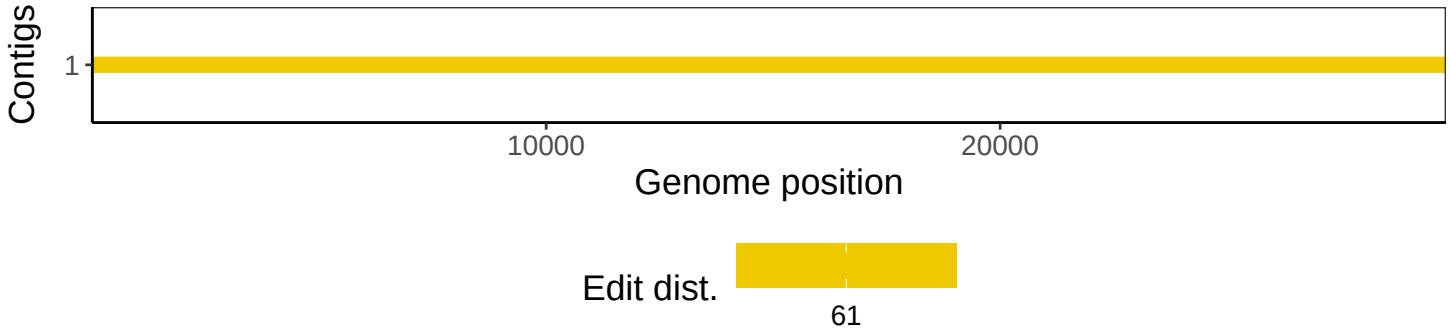
The plot below shows the number of reads covering each nucleotide position in the reference genome. Variants are shown as colored dots along the bottom of the plot and are color coded according by variant types: gray - transgenic, green - silent, gold - missense, red - nonsense, black - indel.



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	3.1.3
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	3.3.3
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