

COVID-19 subject 218

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.

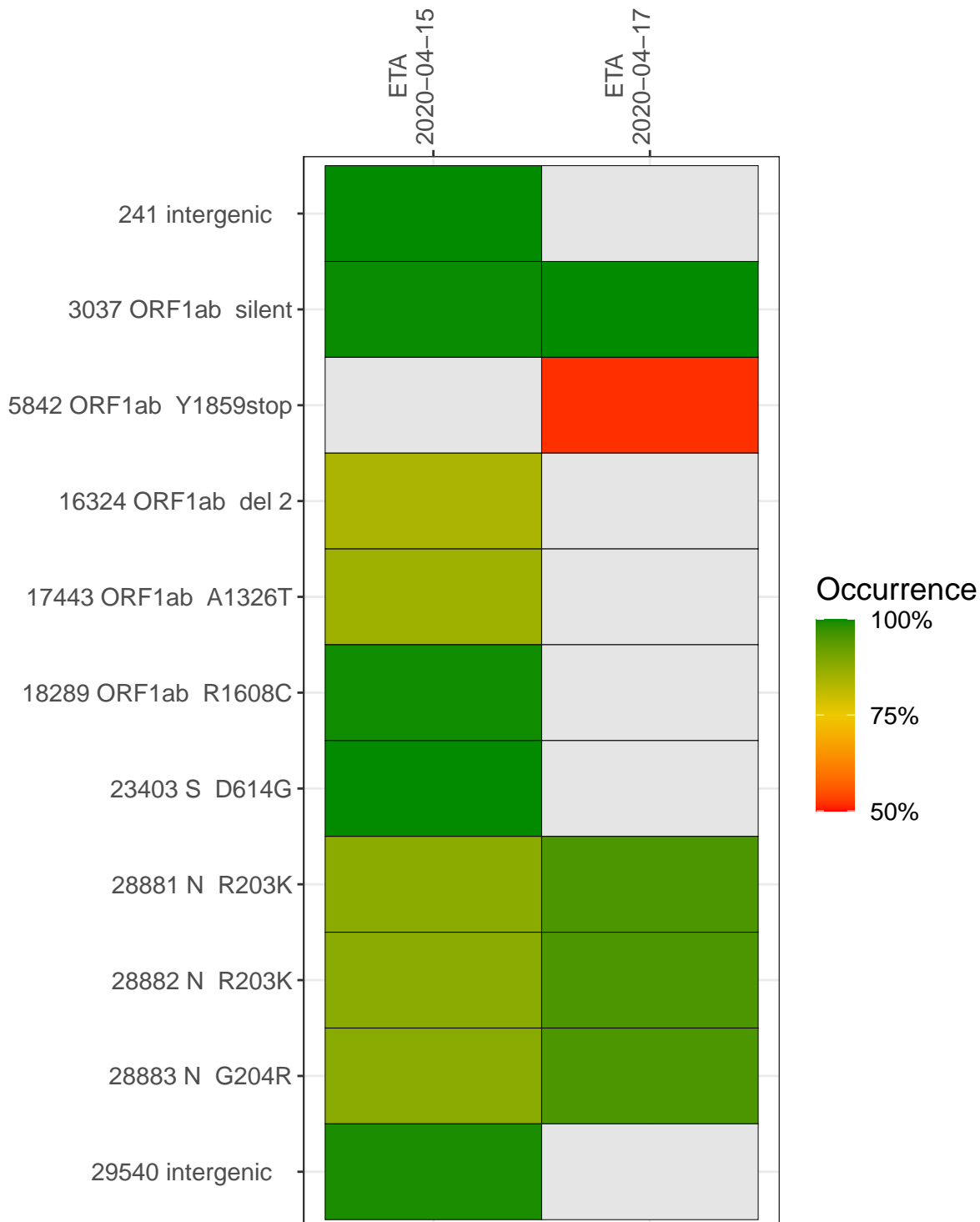
Experiment specific analyses are shown at the end of this report. Lineages are called with the Pangolin software tool (Rambaut et al 2020) for genomes with $> 90\%$ sequence coverage.

Table 1. Sample summary.

Experiment	Type	Genomes	Sample type	Sample date	Largest contig (KD)	Lineage	Reference read coverage	Reference read coverage (≥ 5 reads)
VSP0015	composite	NA	ETA	2020-04-15	2.58	NA	68.3%	54.7%
VSP0016	composite	NA	ETA	2020-04-17	1.57	NA	56.6%	45.8%
VSP0015-1m	single experiment	NA	ETA	2020-04-15	1.06	NA	39.5%	35.7%
VSP0015-2	single experiment	2190	ETA	2020-04-15	1.30	NA	52.7%	37.2%
VSP0016-1m	single experiment	NA	ETA	2020-04-17	1.57	NA	42.0%	27.9%
VSP0016-2	single experiment	2810	ETA	2020-04-17	0.99	NA	34.7%	32.6%

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.



	ETA 2020-04-15		ETA 2020-04-17		
241 intergenic	0	87	0	0	
3037 ORF1ab silent	793	131	0	259	
5842 ORF1ab Y1859stop	1559	0	11131	16	
16324 ORF1ab del 2	1180	147	0	0	
17443 ORF1ab A1326T	0	42	38	304	
18289 ORF1ab R1608C	752	2	0	0	
23403 S D614G	4570	0	0	0	
28881 N R203K	410	83	4	83	
28882 N R203K	410	82	4	83	
28883 N G204R	410	82	4	83	
29540 intergenic	0	119	0	0	
	VSP0015-1m	VSP0015-2	VSP0016-1m	VSP0016-2	

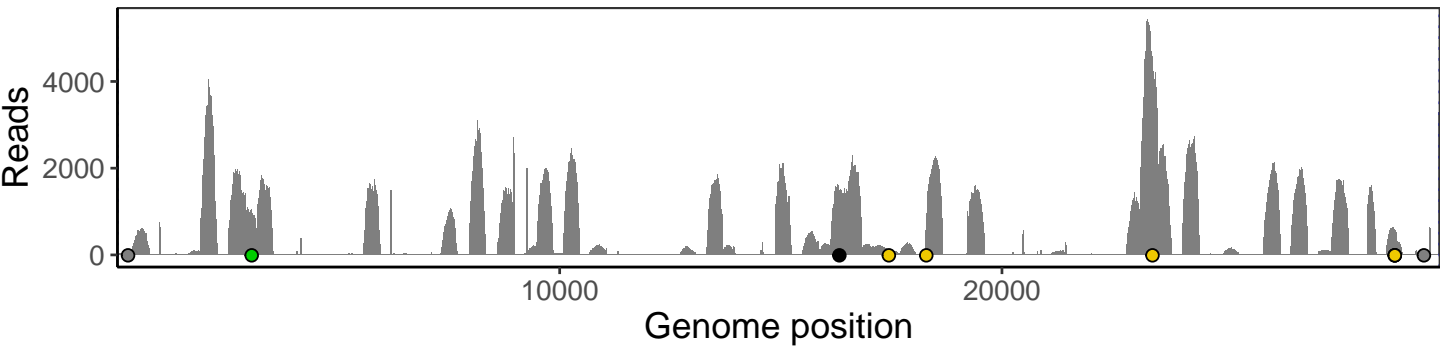
Base change



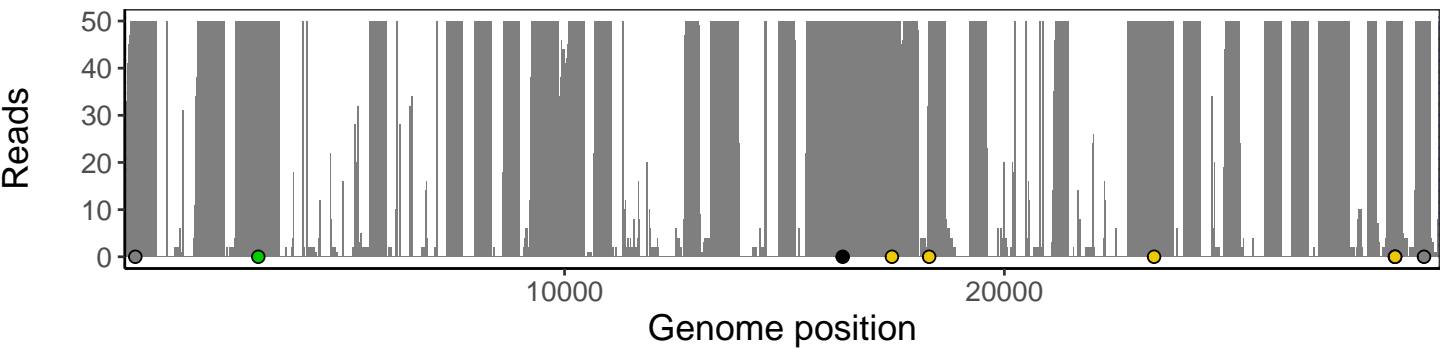
Analyses of individual experiments and composite results

VSP0015 | 2020-04-15 | ETA | 218a-tri | 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.



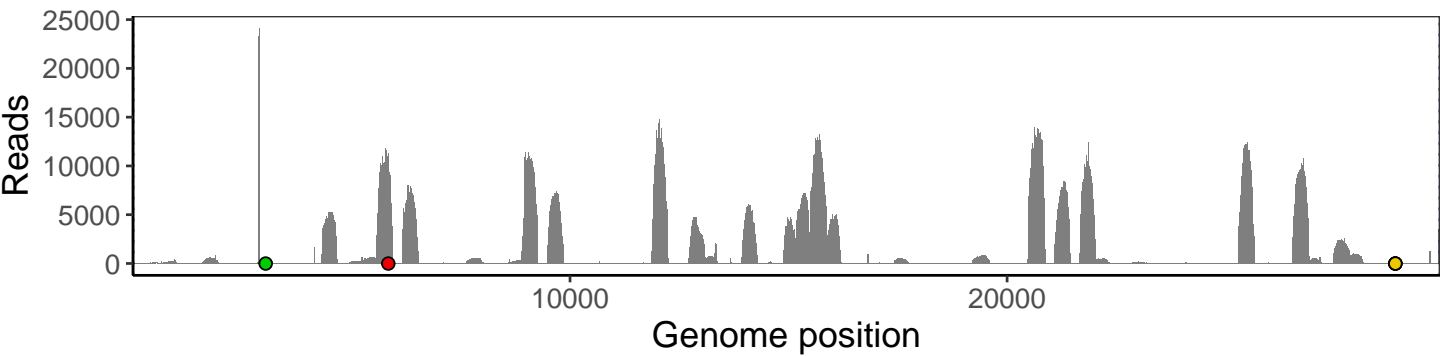
Excerpt from plot above focusing on reads coverage from 0 to 50 NT.



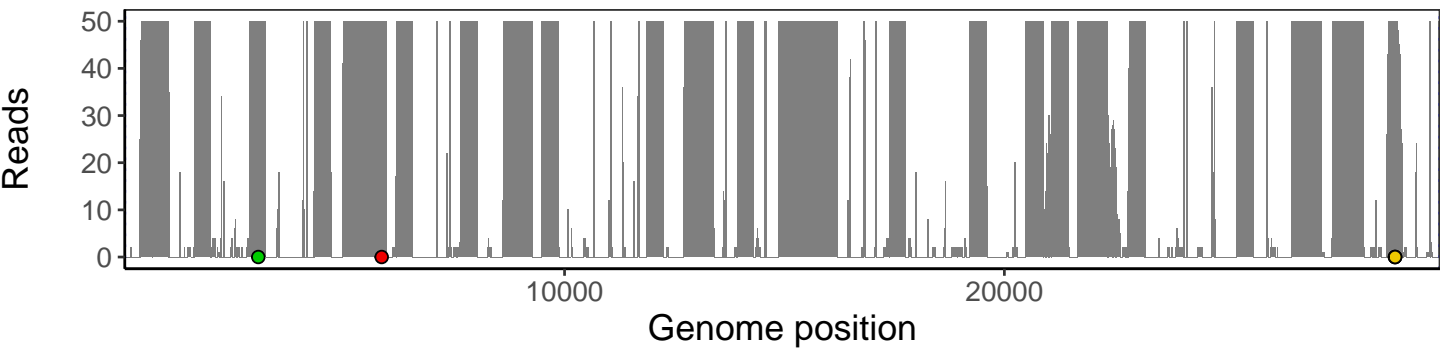
The longest five assembled contigs are shown below colored by their edit distance to the reference genome.



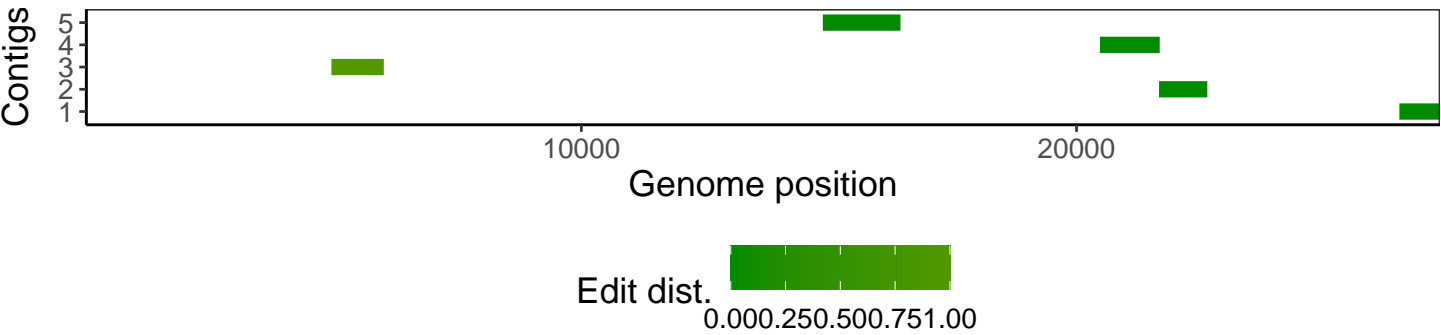
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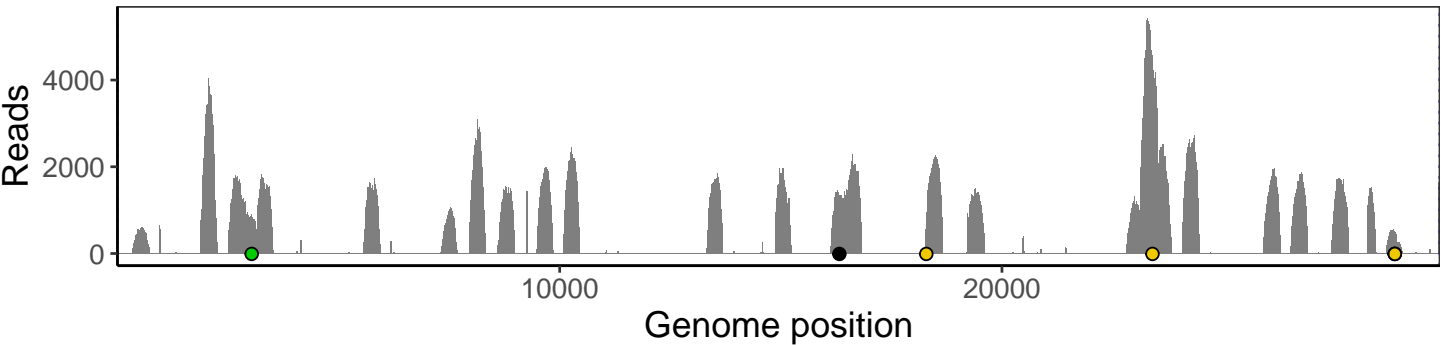
Excerpt from plot above focusing on reads coverage from 0 to 50 NT.



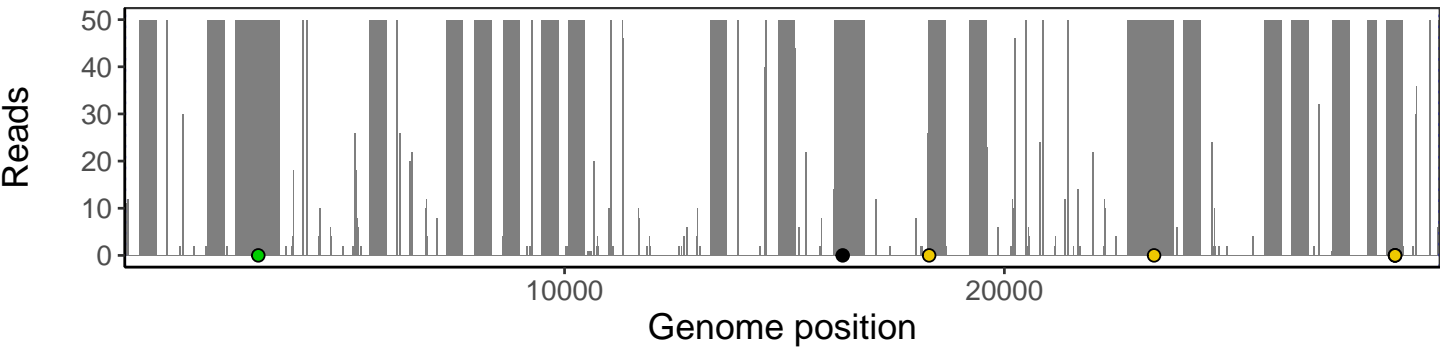
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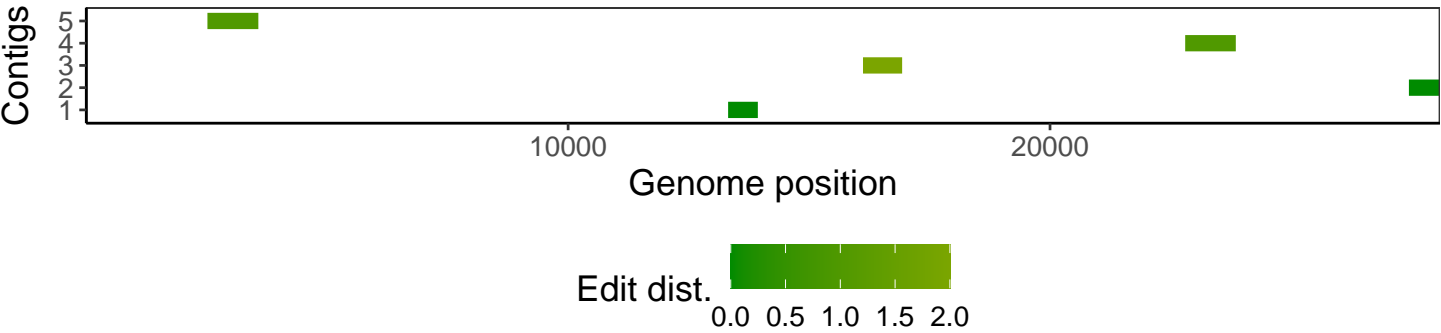
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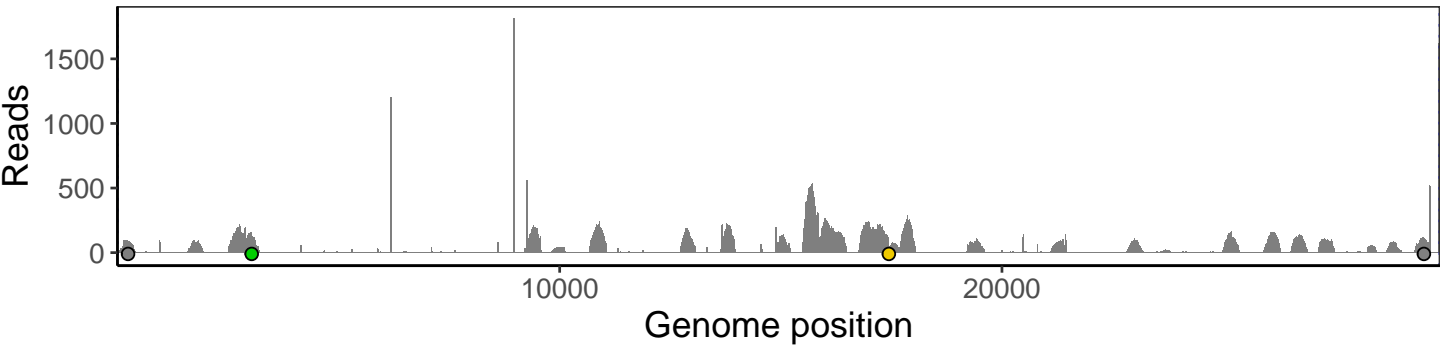
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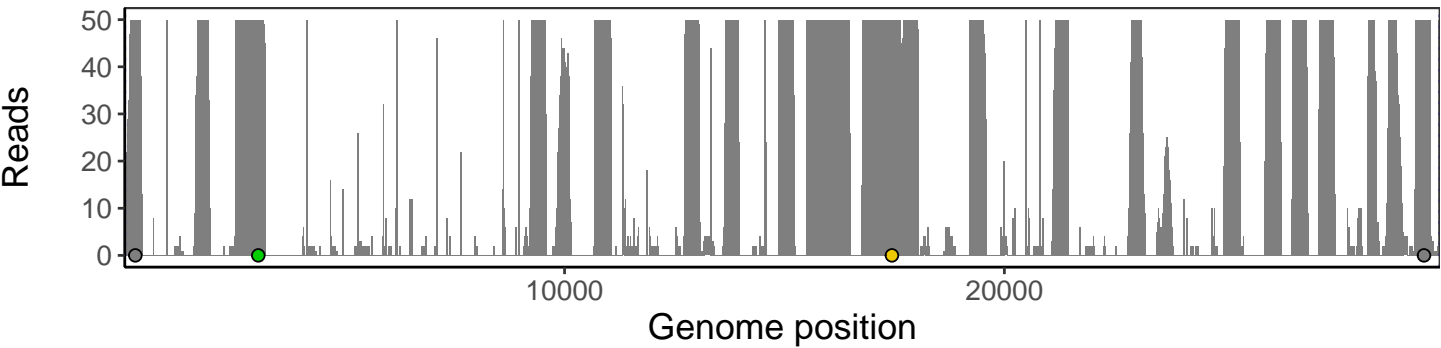
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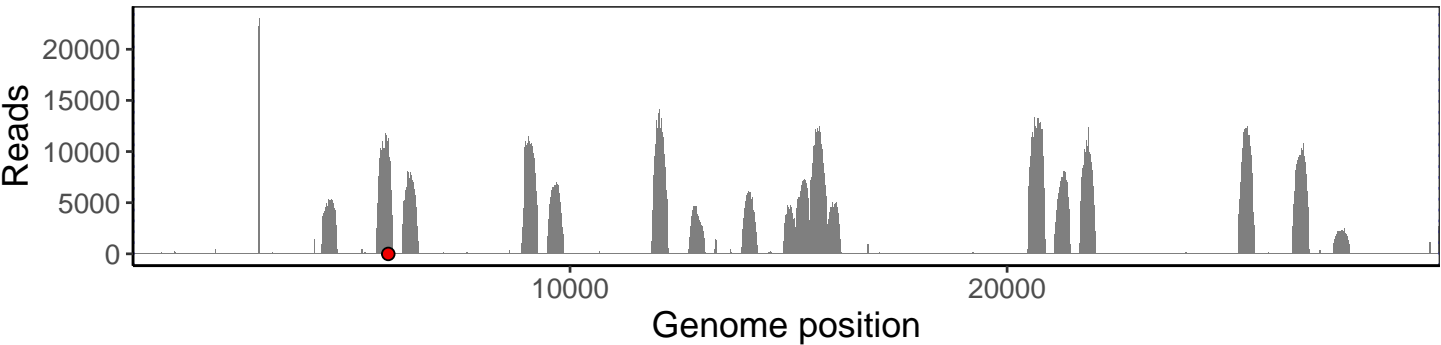
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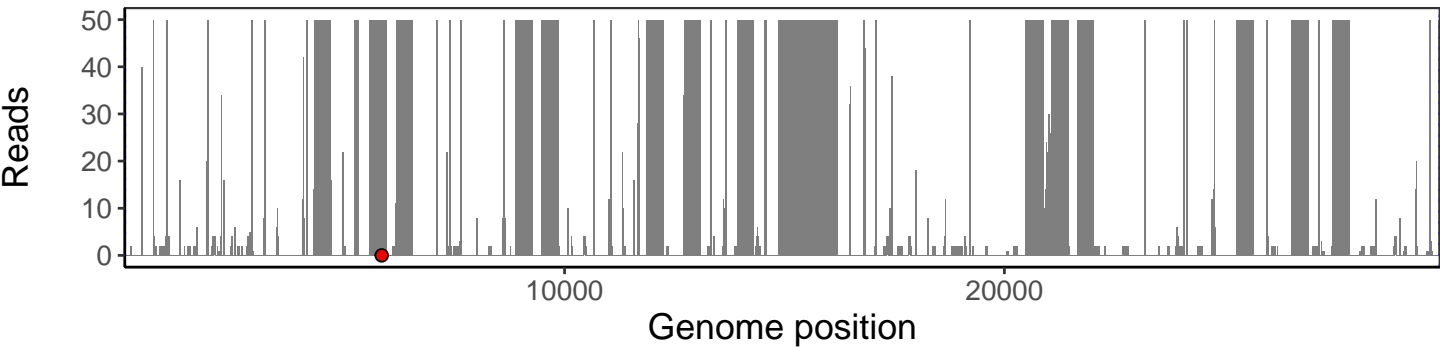
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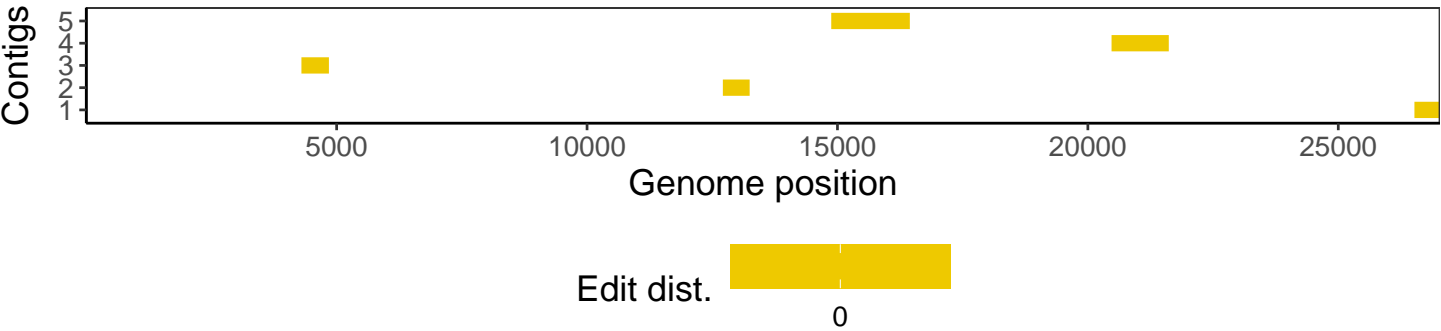
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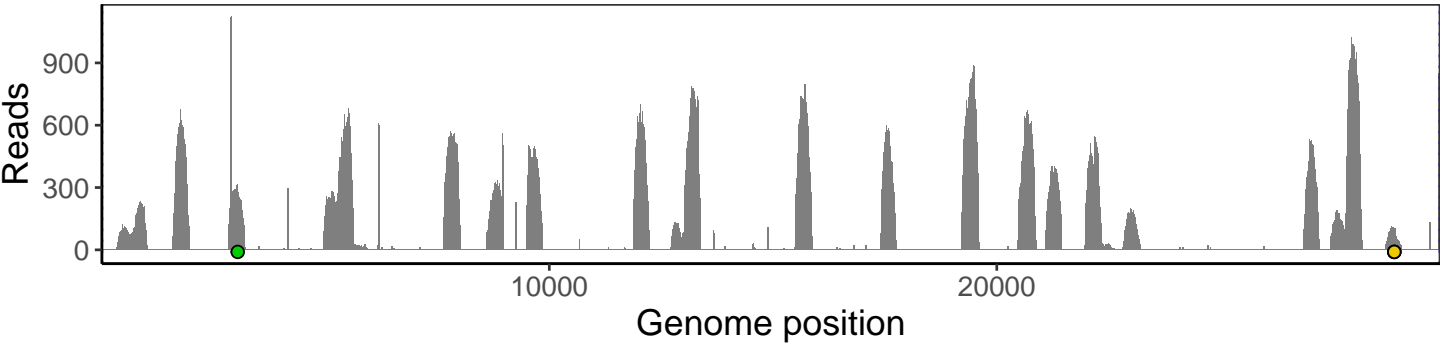
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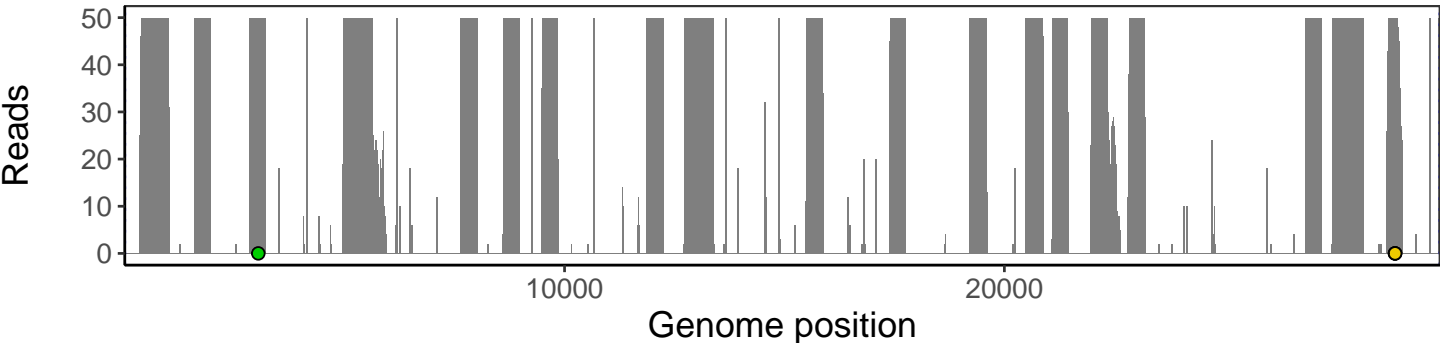
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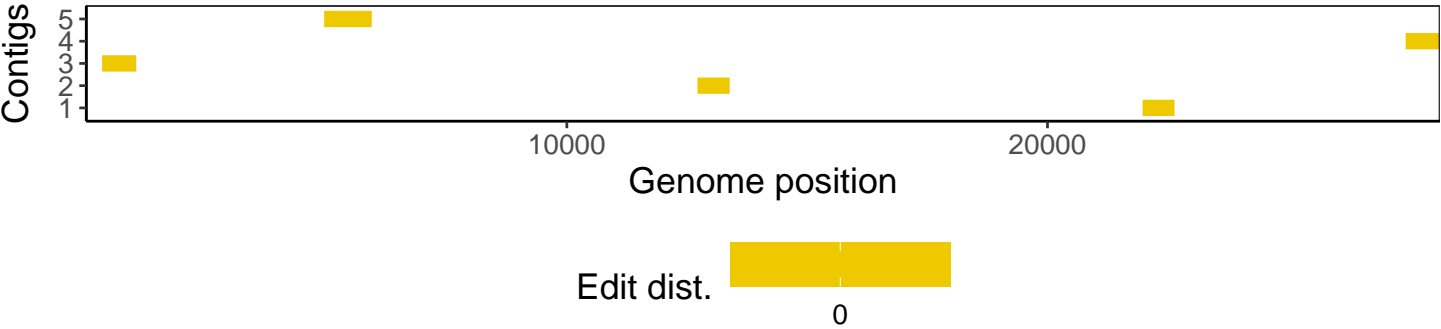
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Software environment

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