# SARS-CoV-2 Guangdong genomic epidemiology

Figure data and plots

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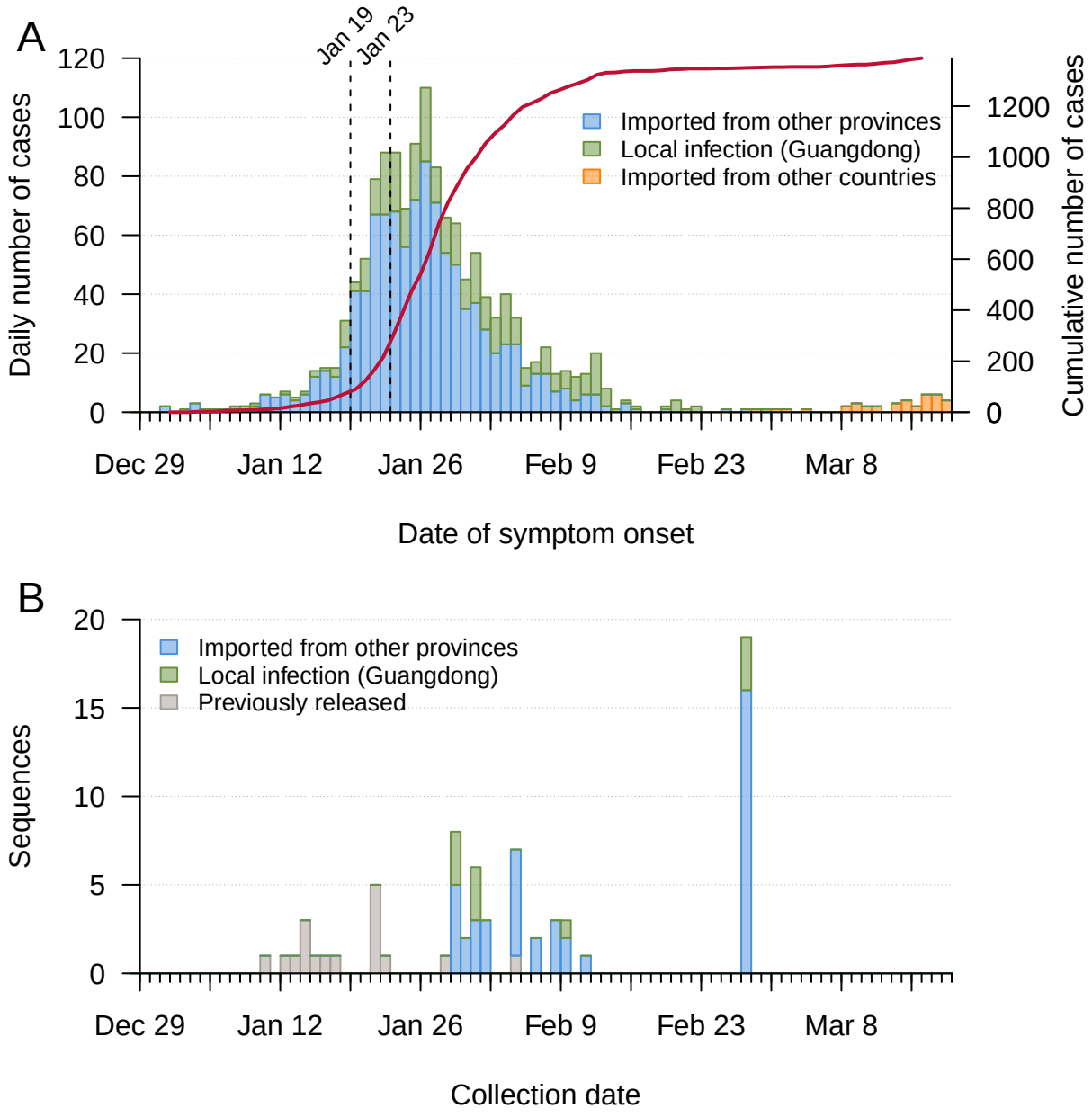
## Process datasets

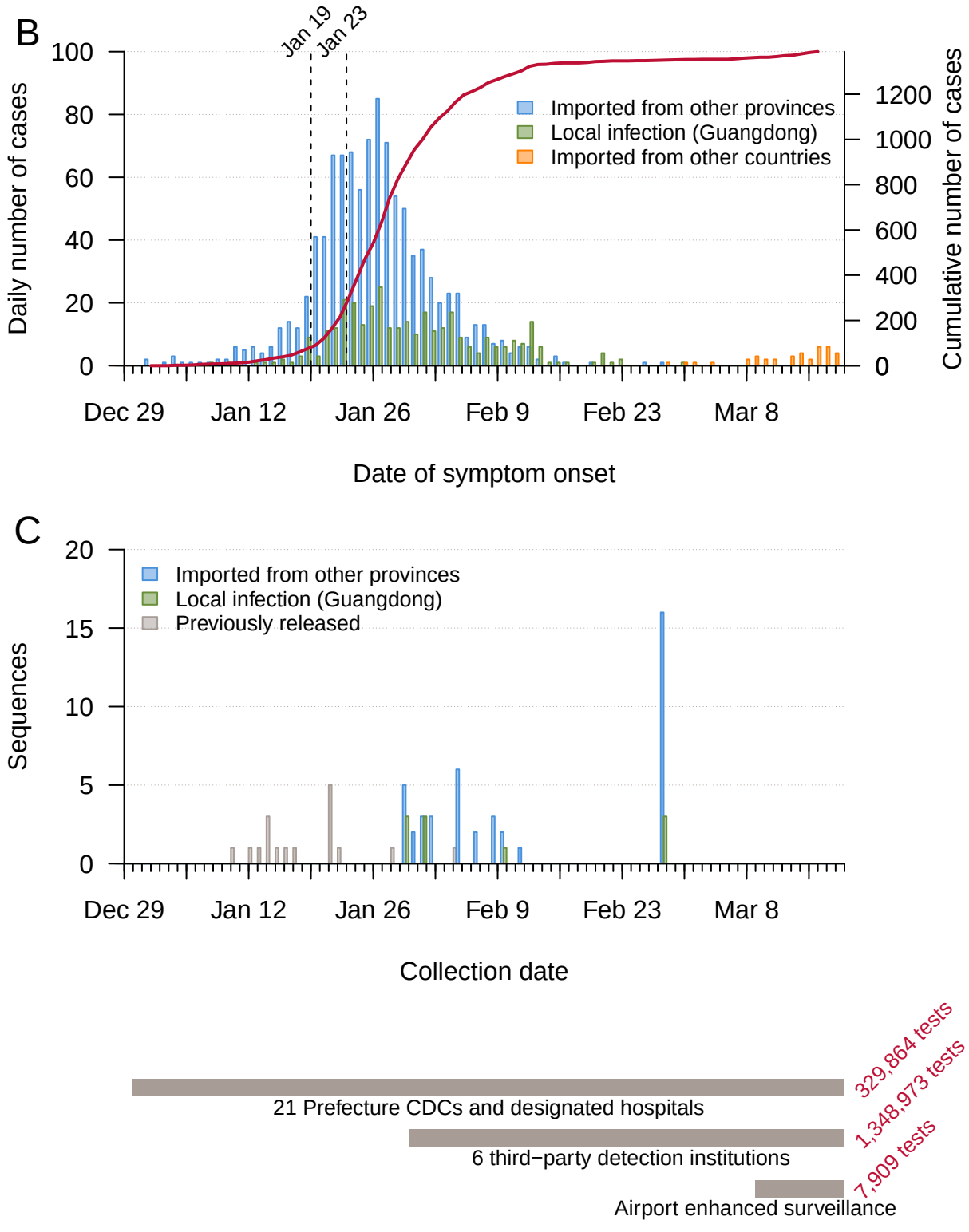
This section does some consistency checks to makes sure different spreadsheets agree with each other (e.g. no samples have different Ct values or collection dates). If no warnings are printed everything is ok.

Checking Ct values and collection dates...

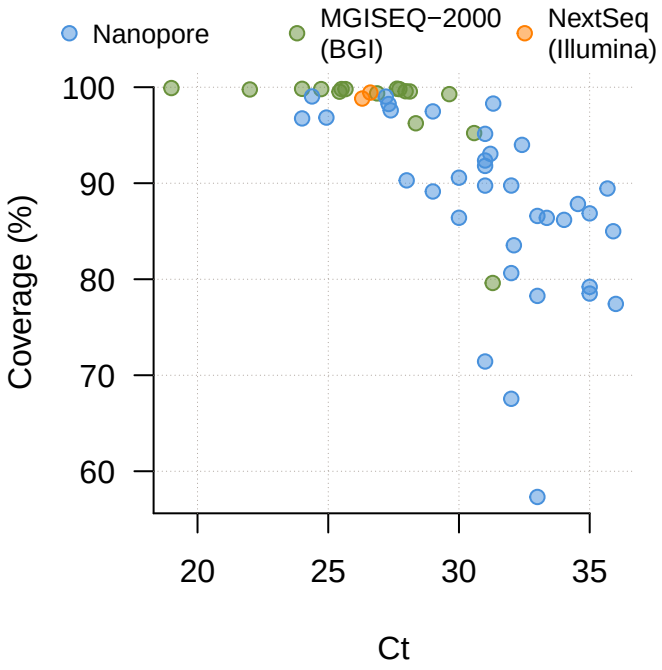
**Figure 1: Cases and Sequences**

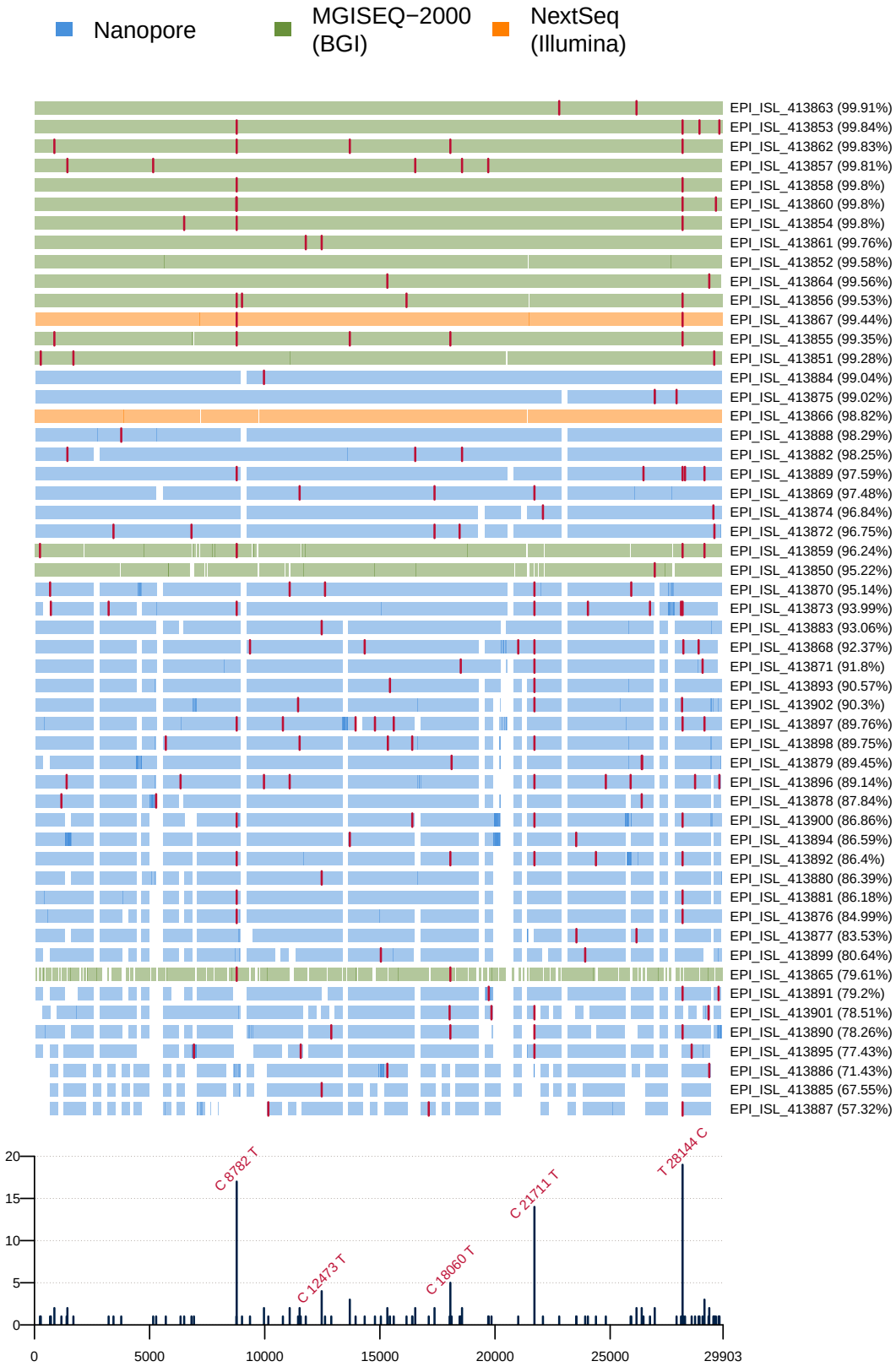


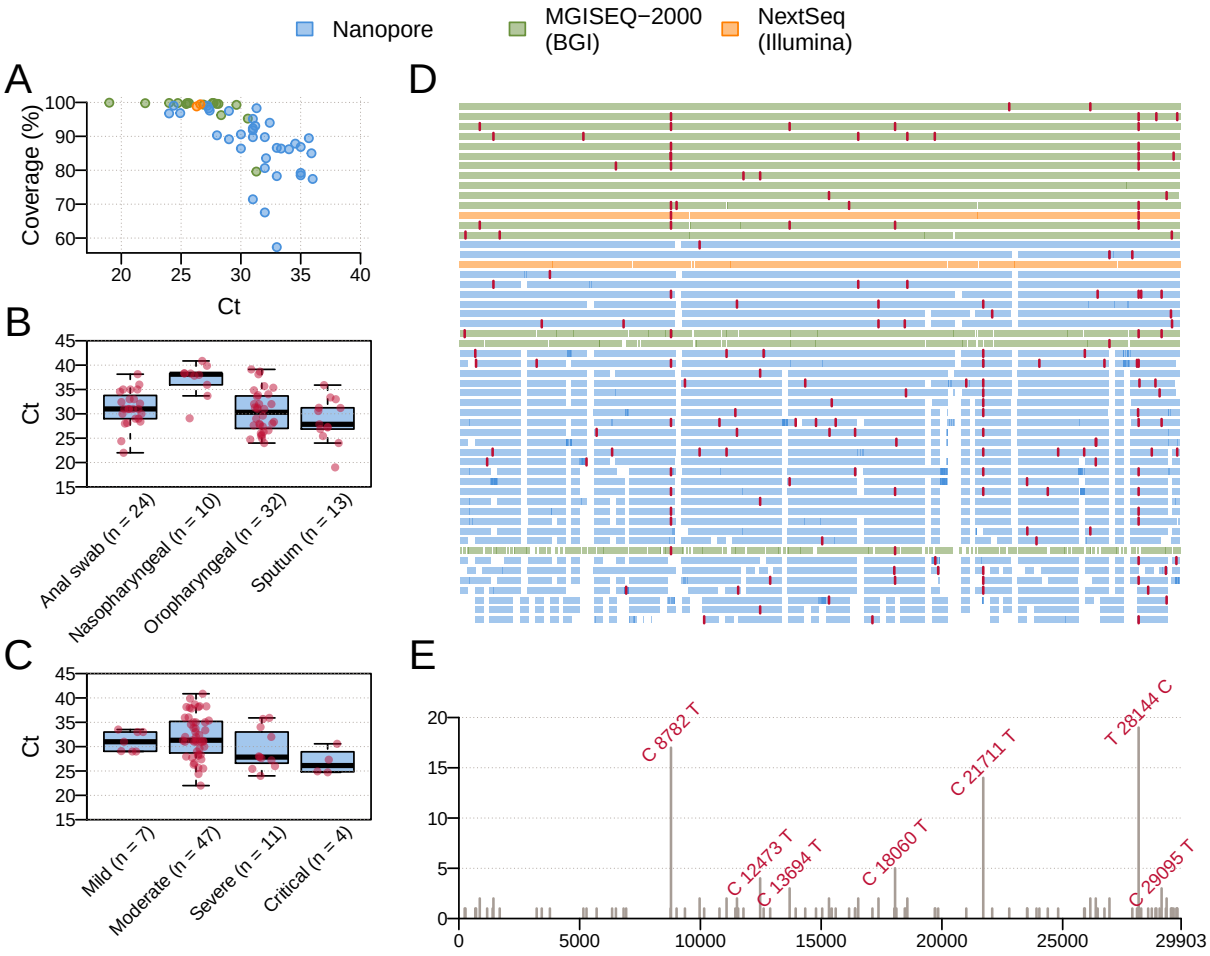
## Fig 1 - Non-stacked



## Figure 2: Sequencing Statistics




Nanopore
MGISEQ−2000 (BGI)
NextSeq (Illumina)
EPI_ISL_413863 (99.91%)
EPI_ISL_413853 (99.84%)
EPI_ISL_413862 (99.83%)
EPI_ISL_413857 (99.81%)
EPI_ISL_413858 (99.8%)
EPI_ISL_413860 (99.8%)
EPI_ISL_413854 (99.8%)
EPI_ISL_413861 (99.76%)
EPI_ISL_413852 (99.58%)
EPI_ISL_413864 (99.56%)
EPI_ISL_413856 (99.53%)
EPI_ISL_413867 (99.44%)
EPI_ISL_413855 (99.35%)
EPI_ISL_413851 (99.28%)
EPI_ISL_413884 (99.04%)
EPI_ISL_413875 (99.02%)
EPI_ISL_413866 (98.82%)
EPI_ISL_413888 (98.29%)
EPI_ISL_413882 (98.25%)
EPI_ISL_413889 (97.59%)
EPI_ISL_413869 (97.48%)
EPI_ISL_413874 (96.84%)
EPI_ISL_413872 (96.75%)
EPI_ISL_413859 (96.24%)
EPI_ISL_413850 (95.22%)
EPI_ISL_413870 (95.14%)
EPI_ISL_413873 (93.99%)
EPI_ISL_413883 (93.06%)
EPI_ISL_413868 (92.37%)
EPI_ISL_413871 (91.8%)
EPI_ISL_413893 (90.57%)
EPI_ISL_413902 (90.3%)
EPI_ISL_413897 (89.76%)
EPI_ISL_413898 (89.75%)
EPI_ISL_413879 (89.45%)
EPI_ISL_413896 (89.14%)
EPI_ISL_413878 (87.84%)
EPI_ISL_413900 (86.86%)
EPI_ISL_413894 (86.59%)
EPI_ISL_413892 (86.4%)
EPI_ISL_413880 (86.39%)
EPI_ISL_413881 (86.18%)
EPI_ISL_413876 (84.99%)
EPI_ISL_413877 (83.53%)
EPI_ISL_413899 (80.64%)
EPI_ISL_413865 (79.61%)
EPI_ISL_413891 (79.2%)
EPI_ISL_413901 (78.51%)
EPI_ISL_413890 (78.26%)
EPI_ISL_413895 (77.43%)
EPI_ISL_413886 (71.43%)
EPI_ISL_413885 (67.55%)
EPI_ISL_413887 (57.32%)
20
15
10
5
0
C 8782 T
C 12473 T
C 18060 T
C 21711 T
T 28144 C
0
5000
10000
15000
20000
25000
29903

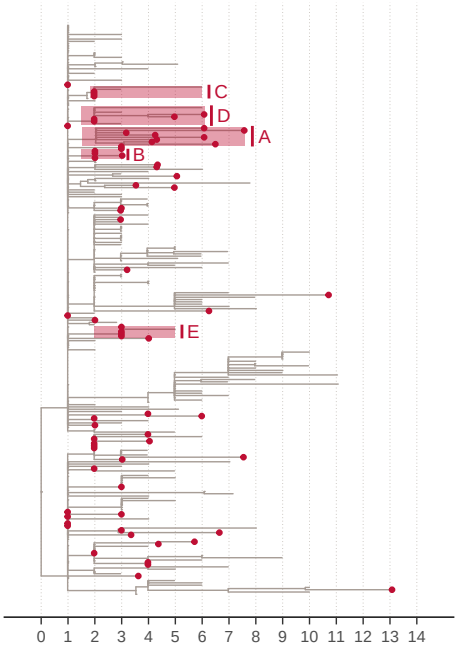



## Kruskal-Wallis H-test

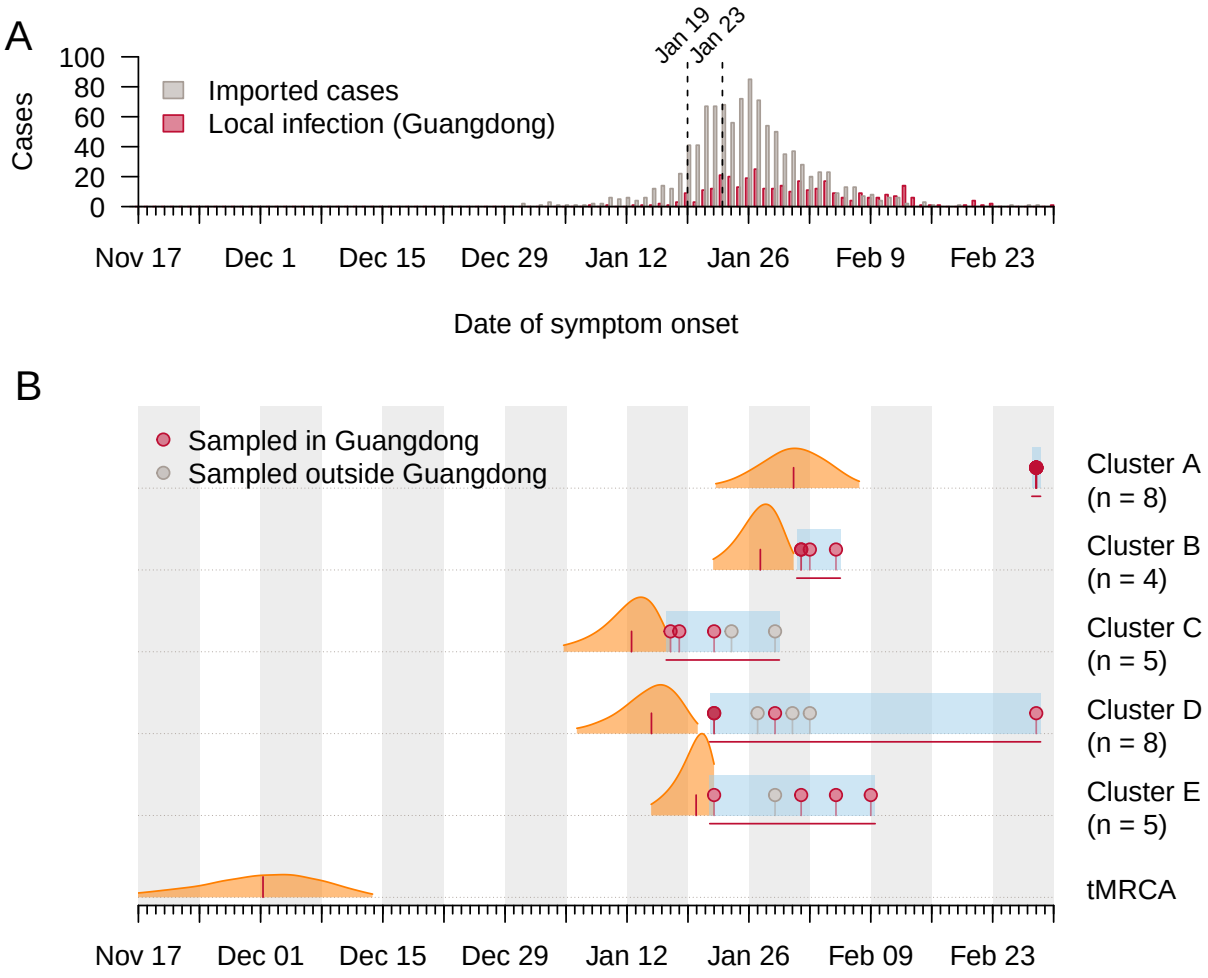
```
##
##  Kruskal-Wallis rank sum test
##
## data:  ct by symptom
## Kruskal-Wallis chi-squared = 8.9434, df = 3, p-value = 0.03005
```

```
##
##  Kruskal-Wallis rank sum test
##
## data:  ct by sample_type
## Kruskal-Wallis chi-squared = 18.447, df = 3, p-value = 0.0003557
```

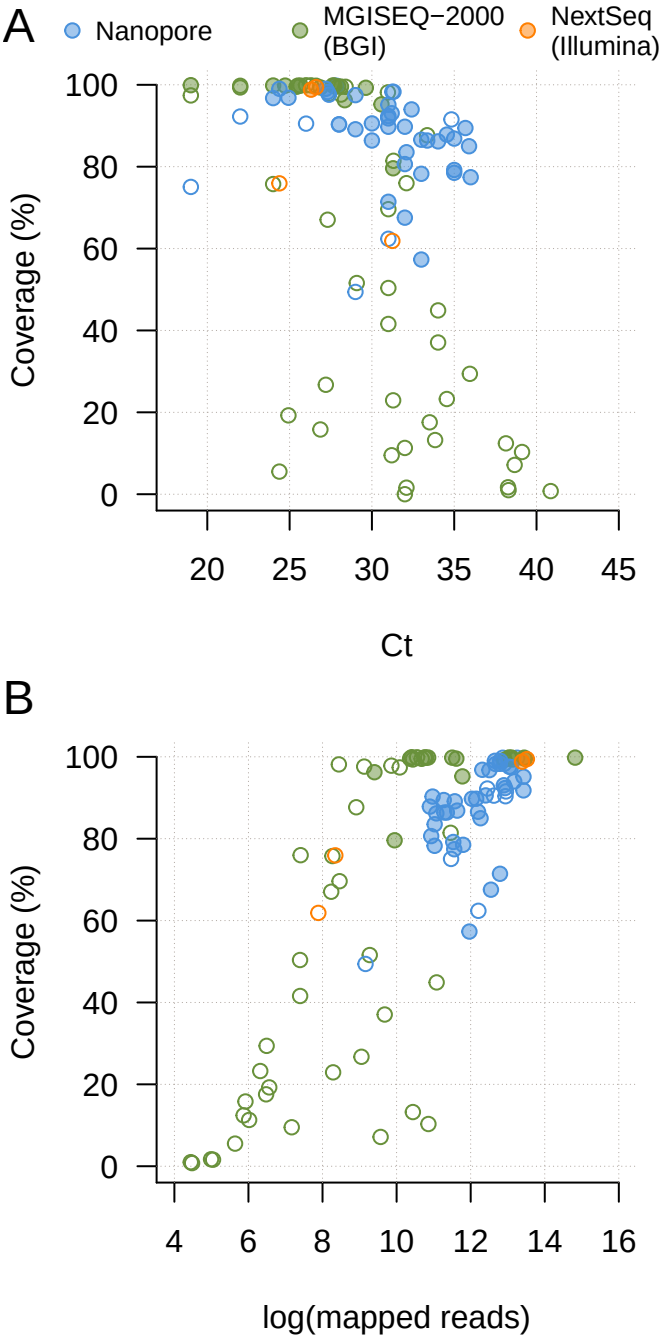
# Fig 3A

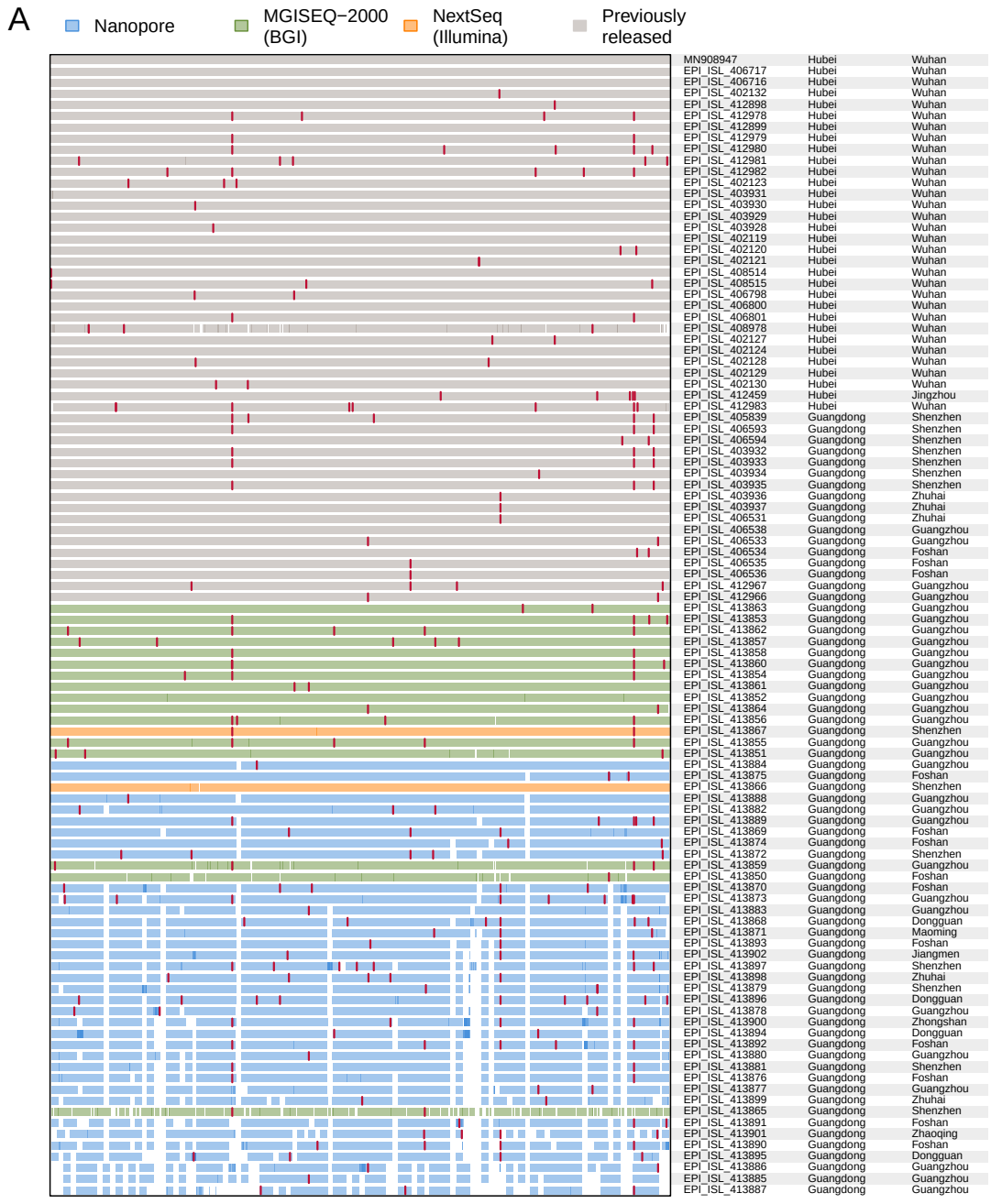


## Figure 4 - TaxonSet Ages



## Supplementary figures (or not included)




A
Nanopore
MGISEQ−2000 (BGI)
NextSeq (Illumina)
Previously released
MN908947 Hubei Wuhan
EPI_ISL_406717 Hubei Wuhan
EPI_ISL_406716 Hubei Wuhan
EPI_ISL_402132 Hubei Wuhan
EPI_ISL_412898 Hubei Wuhan
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EPI_ISL_412981 Hubei Wuhan
EPI_ISL_412982 Hubei Wuhan
EPI_ISL_402123 Hubei Wuhan
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EPI_ISL_402119 Hubei Wuhan
EPI_ISL_402120 Hubei Wuhan
EPI_ISL_402121 Hubei Wuhan
EPI_ISL_408514 Hubei Wuhan
EPI_ISL_408515 Hubei Wuhan
EPI_ISL_406798 Hubei Wuhan
EPI_ISL_406800 Hubei Wuhan
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EPI_ISL_402124 Hubei Wuhan
EPI_ISL_402128 Hubei Wuhan
EPI_ISL_402129 Hubei Wuhan
EPI_ISL_402130 Hubei Wuhan
EPI_ISL_412459 Hubei Jingzhou
EPI_ISL_412983 Hubei Wuhan
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EPI_ISL_413901 Guangdong Zhaoqing
EPI_ISL_413890 Guangdong Foshan
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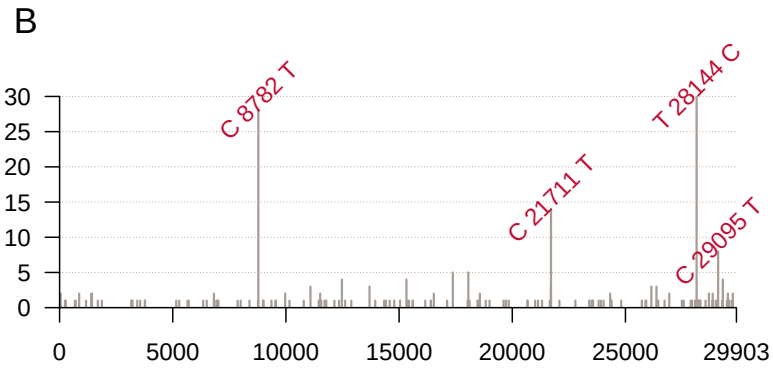
B
C 8782 T
T 28144 C
C 21711 T
C 29095 T
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15
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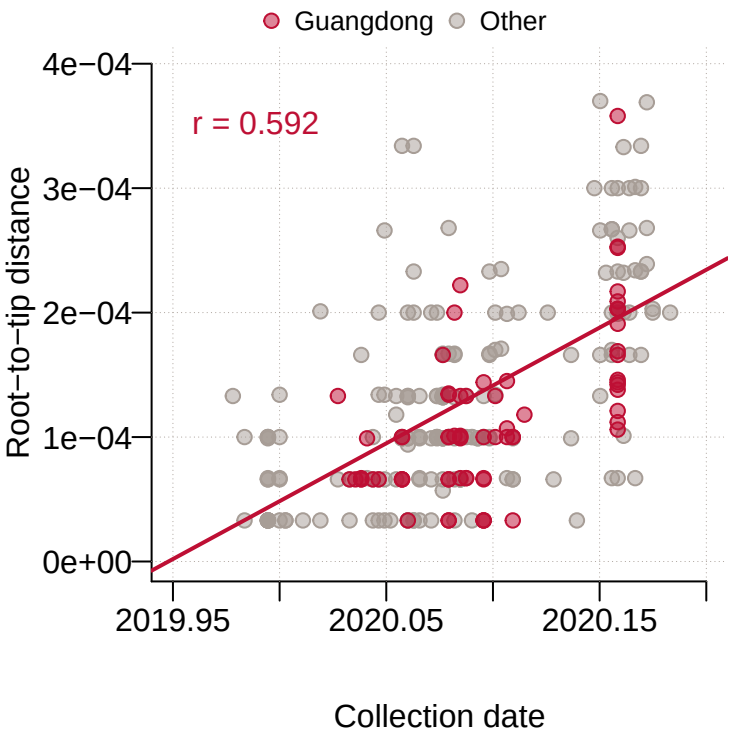
29903


Guangdong
Other
r = 0.592
Root−to−tip distance
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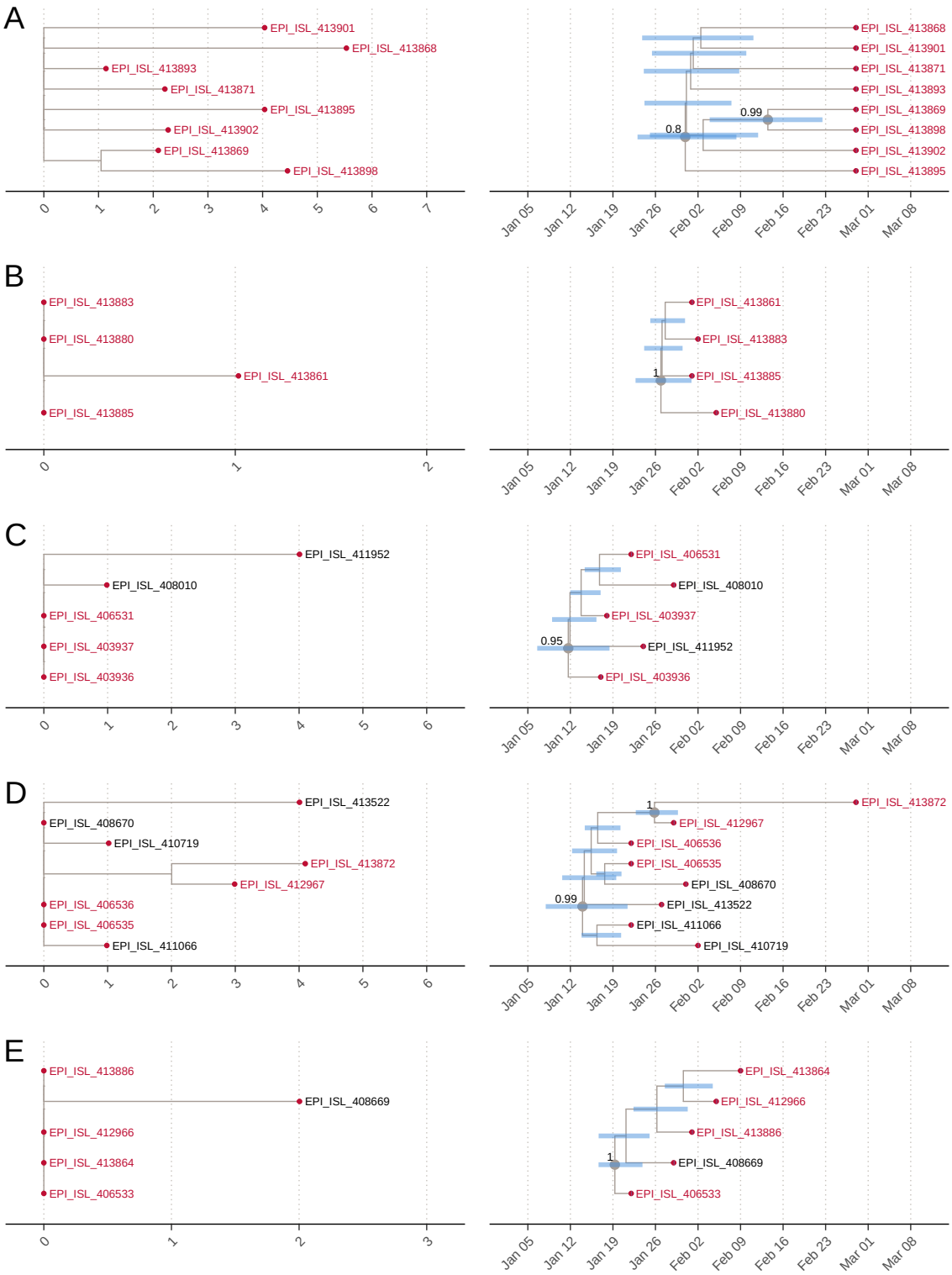
3e−04
2e−04
1e−04
0e+00
2019.95
2020.05
2020.15
Collection date


A
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EPI_ISL_413868
EPI_ISL_413893
EPI_ISL_413871
EPI_ISL_413895
EPI_ISL_413902
EPI_ISL_413869
EPI_ISL_413898
0 1 2 3 4 5 6 7
EPI_ISL_413868
EPI_ISL_413901
EPI_ISL_413871
EPI_ISL_413893
EPI_ISL_413869
EPI_ISL_413898
EPI_ISL_413902
EPI_ISL_413895
0.99
0.8
Jan 05 Jan 12 Jan 19 Jan 26 Feb 02 Feb 09 Feb 16 Feb 23 Mar 01 Mar 08
B
EPI_ISL_413883
EPI_ISL_413880
EPI_ISL_413861
EPI_ISL_413885
0 1 2
EPI_ISL_413861
EPI_ISL_413883
EPI_ISL_413885
EPI_ISL_413880
1
Jan 05 Jan 12 Jan 19 Jan 26 Feb 02 Feb 09 Feb 16 Feb 23 Mar 01 Mar 08
C
EPI_ISL_411952
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EPI_ISL_406531
EPI_ISL_403937
EPI_ISL_403936
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EPI_ISL_406531
EPI_ISL_408010
EPI_ISL_403937
EPI_ISL_411952
EPI_ISL_403936
0.95
Jan 05 Jan 12 Jan 19 Jan 26 Feb 02 Feb 09 Feb 16 Feb 23 Mar 01 Mar 08
D
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EPI_ISL_410719
EPI_ISL_413872
EPI_ISL_412967
EPI_ISL_406536
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EPI_ISL_411066
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1
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EPI_ISL_411066
EPI_ISL_410719
0.99
Jan 05 Jan 12 Jan 19 Jan 26 Feb 02 Feb 09 Feb 16 Feb 23 Mar 01 Mar 08
E
EPI_ISL_413886
EPI_ISL_408669
EPI_ISL_412966
EPI_ISL_413864
EPI_ISL_406533
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EPI_ISL_408669
EPI_ISL_406533
1
Jan 05 Jan 12 Jan 19 Jan 26 Feb 02 Feb 09 Feb 16 Feb 23 Mar 01 Mar 08

## Session info

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## Platform: x86_64-apple-darwin15.6.0 (64-bit)
## Running under: macOS Sierra 10.12.6
##
## Matrix products: default
## BLAS: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRblas.0.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRlapack.dylib
##
## locale:
## [1] en_GB.UTF-8/en_GB.UTF-8/en_GB.UTF-8/C/en_GB.UTF-8/en_GB.UTF-8
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## other attached packages:
##  [1] lubridate_1.7.4 phytools_0.6-99 maps_3.3.0      ape_5.3
##  [5] ggtree_2.1.1    ggplot2_3.2.1   treeio_1.11.2   beastio_0.2.5
##  [9] coda_0.19-3     gplots_3.0.1.1  cowplot_1.0.0
##
## loaded via a namespace (and not attached):
##  [1] Rcpp_1.0.3              lattice_0.20-38         tidyr_1.0.0
##  [4] gtools_3.8.1            assertthat_0.2.1        zeallot_0.1.0
##  [7] digest_0.6.23           R6_2.4.1                backports_1.1.5
## [10] evaluate_0.14           pillar_1.4.2            rlang_0.4.2
## [13] lazyeval_0.2.2          gdata_2.18.0            phangorn_2.5.5
## [16] combinat_0.0-8          Matrix_1.2-18           rmarkdown_2.0
## [19] labeling_0.3            stringr_1.4.0           igraph_1.2.4.2
## [22] munsell_0.5.0           compiler_3.5.1          numDeriv_2016.8-1.1
## [25] xfun_0.11               pkgconfig_2.0.3         mnormt_1.5-5
## [28] htmltools_0.4.0         tidyselect_0.2.5        expm_0.999-4
## [31] tibble_2.1.3            quadprog_1.5-8          crayon_1.3.4
## [34] dplyr_0.8.3             withr_2.1.2             MASS_7.3-51.4
## [37] bitops_1.0-6            grid_3.5.1              nlme_3.1-143
## [40] jsonlite_1.6            gtable_0.3.0            lifecycle_0.1.0
## [43] magrittr_1.5            scales_1.1.0            KernSmooth_2.23-16
## [46] tidytree_0.3.1          stringi_1.4.3           farver_2.0.1
## [49] scatterplot3d_0.3-41    rvcheck_0.1.7           vctrs_0.2.1
## [52] fastmatch_1.1-0         RColorBrewer_1.1-2      tools_3.5.1
## [55] glue_1.3.1              purrr_0.3.3             plotrix_3.7-7
## [58] parallel_3.5.1          yaml_2.2.0              colorspace_1.4-1
## [61] BiocManager_1.30.10     caTools_1.17.1.3        animation_2.6
## [64] clusterGeneration_1.3.4 knitr_1.26
```