

# Lineage Summary

October 11th, 2022

- Outbreak.info lineage trends
- CDC NOWCAST lineage trends
- Pangolin update
- BA.2.75 study
- BQ.1.1, XBB, XBC trees

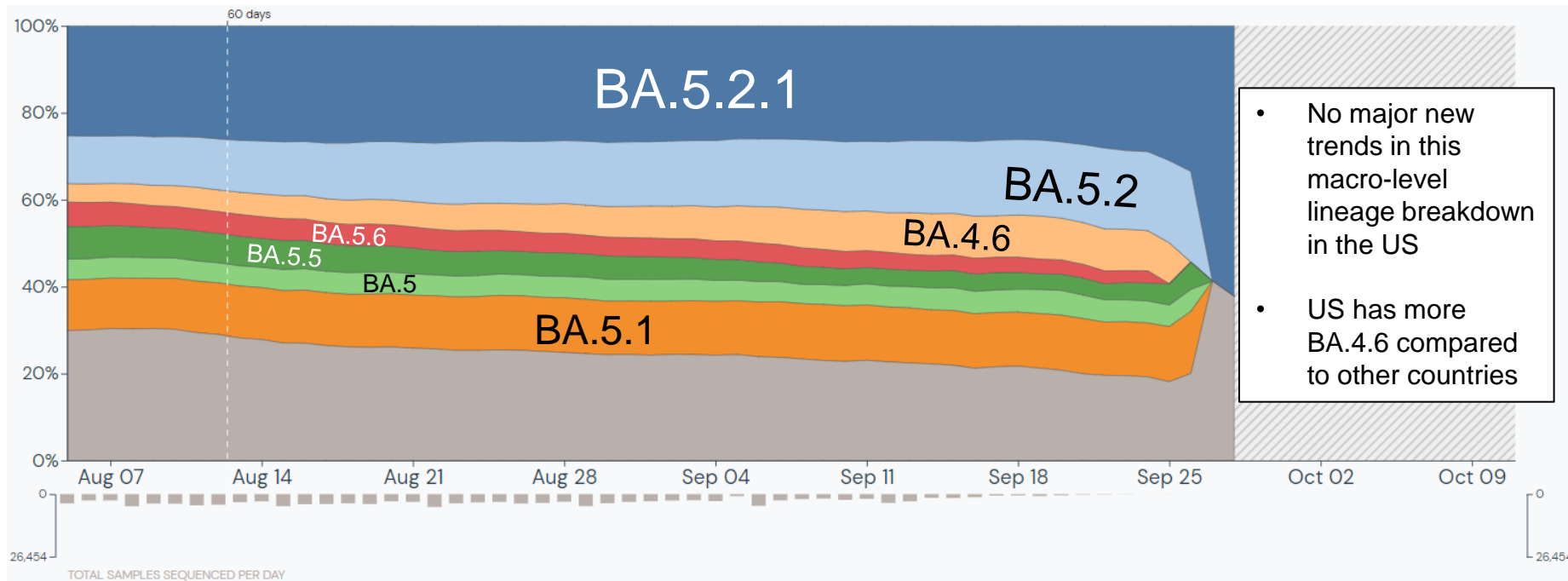


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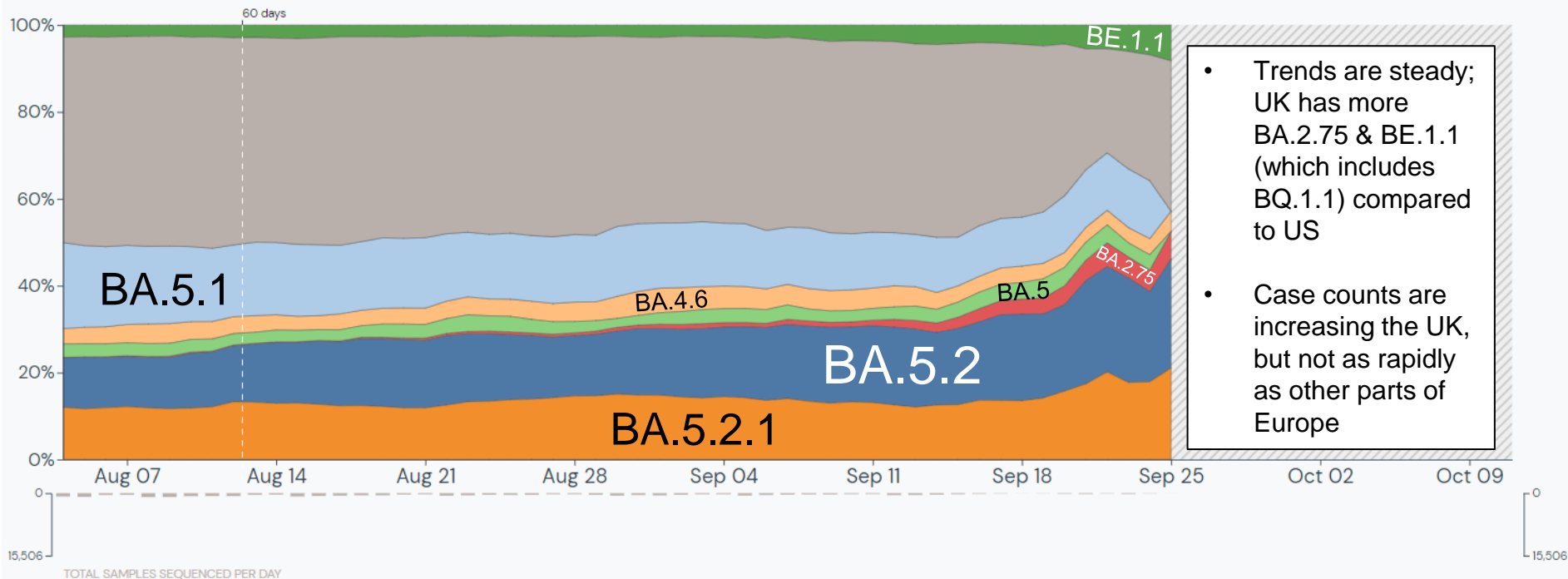
# Outbreak.info – lineage prevalence in the US



- No major new trends in this macro-level lineage breakdown in the US
- US has more BA.4.6 compared to other countries

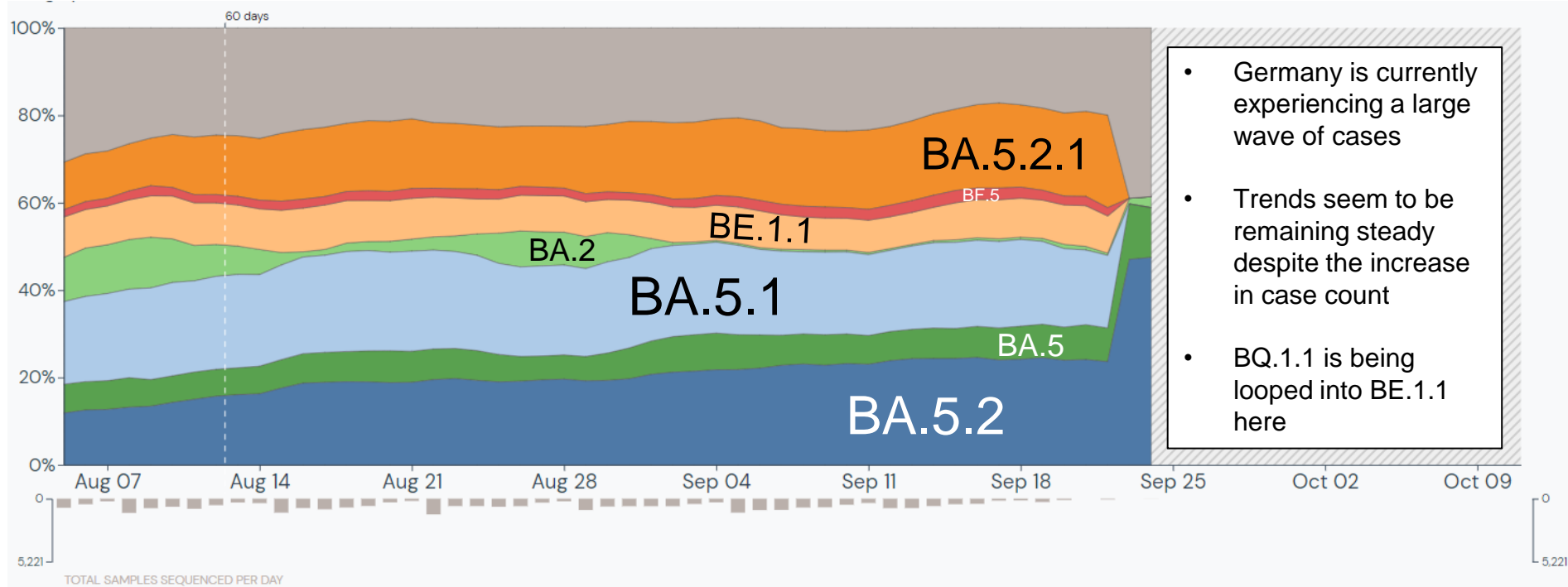
Lineages without daily prevalence > 3% on at least 5 days in the last 60 are grouped into "Other"

# Outbreak.info – lineage prevalence in the UK



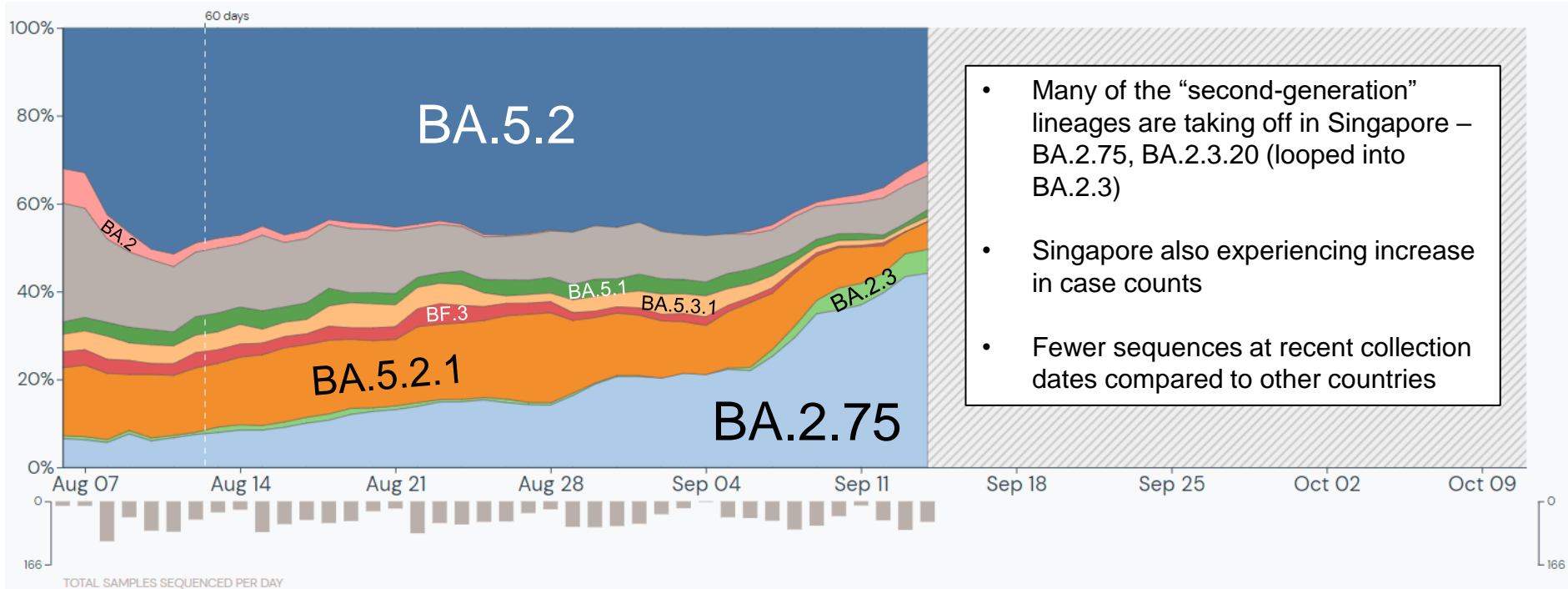
Lineages without daily prevalence > 3% on at least 5 days in the last 60 are grouped into "Other"

# Outbreak.info – lineage prevalence in Germany



Lineages without daily prevalence > 3% on at least 5 days in the last 60 are grouped into "Other"

# Outbreak.info – lineage prevalence in Singapore



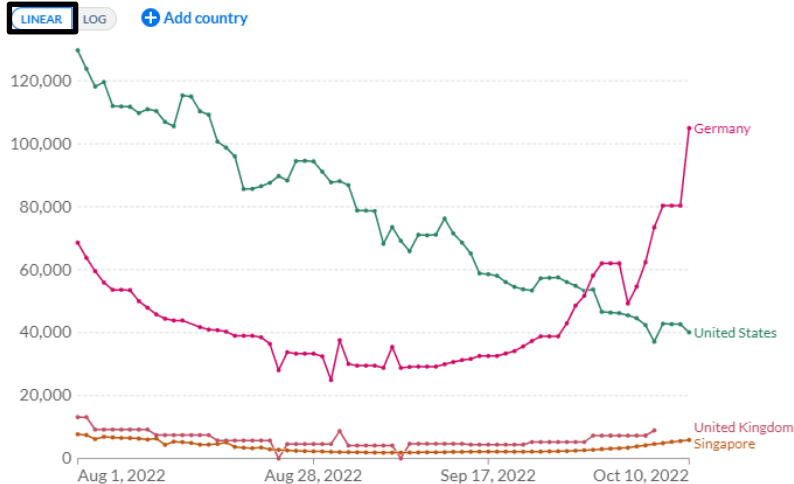
Lineages without daily prevalence > 3% on at least 5 days in the last 60 are grouped into “Other”

# Case counts for comparison countries

## Daily new confirmed COVID-19 cases

7-day rolling average. Due to limited testing, the number of confirmed cases is lower than the true number of infections.

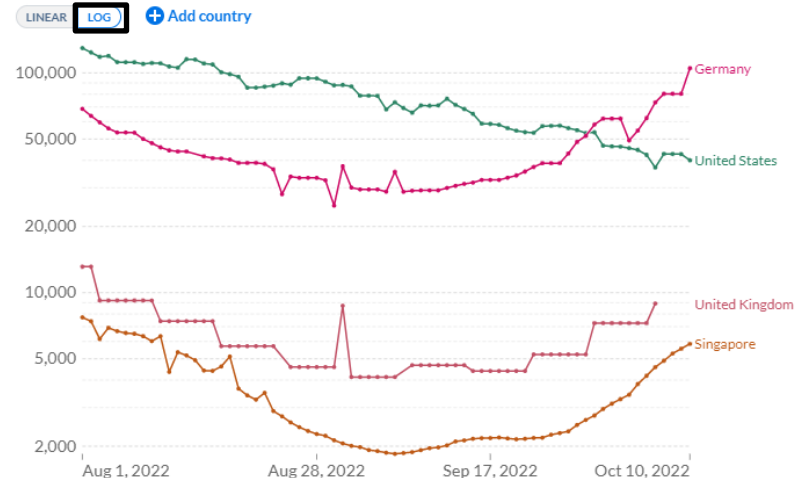
Our World  
in Data



## Daily new confirmed COVID-19 cases

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Our World  
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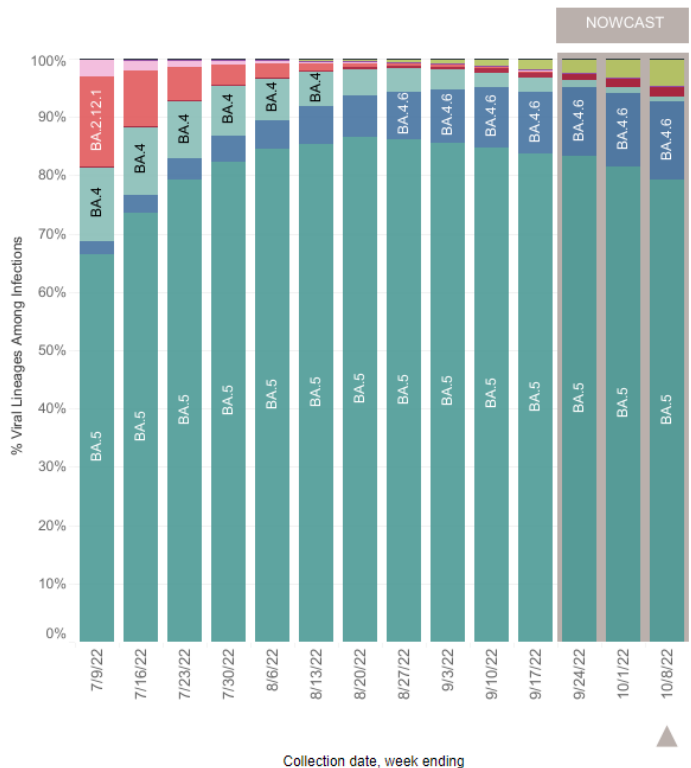


- Many countries are currently experiencing waves, but many of the newer lineages (e.g. BQ.1.1) aren't at high enough prevalence to be the only factor driving those waves
- Waning population immunity likely playing a role, and it will be interesting to see how differences in booster strains and booster uptakes impact lineage dynamics going forward

# CDC NOWCAST – lineage prevalence in the US

United States: 7/3/2022 – 10/8/2022

United States: 10/2/2022 – 10/8/2022 NOWCAST



| USA       |           |          |        |            |       |
|-----------|-----------|----------|--------|------------|-------|
| WHO label | Lineage # | US Class | %Total | 95%PI      |       |
| Omicron   | BA.5      | VOC      | 79.2%  | 77.5-80.7% | -2.1% |
|           | BA.4.6    | VOC      | 13.6%  | 12.4-14.9% | +0.8% |
|           | BF.7      | VOC      | 4.6%   | 3.9-5.4%   | +1.2% |
|           | BA.2.75   | VOC      | 1.8%   | 1.4-2.4%   | +0.4% |
|           | BA.4      | VOC      | 0.8%   | 0.7-0.9%   | -0.3% |
|           | BA.2.12.1 | VOC      | 0.0%   | 0.0-0.0%   |       |
|           | BA.2      | VOC      | 0.0%   | 0.0-0.0%   |       |
|           | B.1.1.529 | VOC      | 0.0%   | 0.0-0.0%   |       |
|           | BA.1.1    | VOC      | 0.0%   | 0.0-0.0%   |       |
| Delta     | B.1.617.2 | VBM      | 0.0%   | 0.0-0.0%   |       |
| Other     | Other*    |          | 0.0%   | 0.0-0.0%   |       |

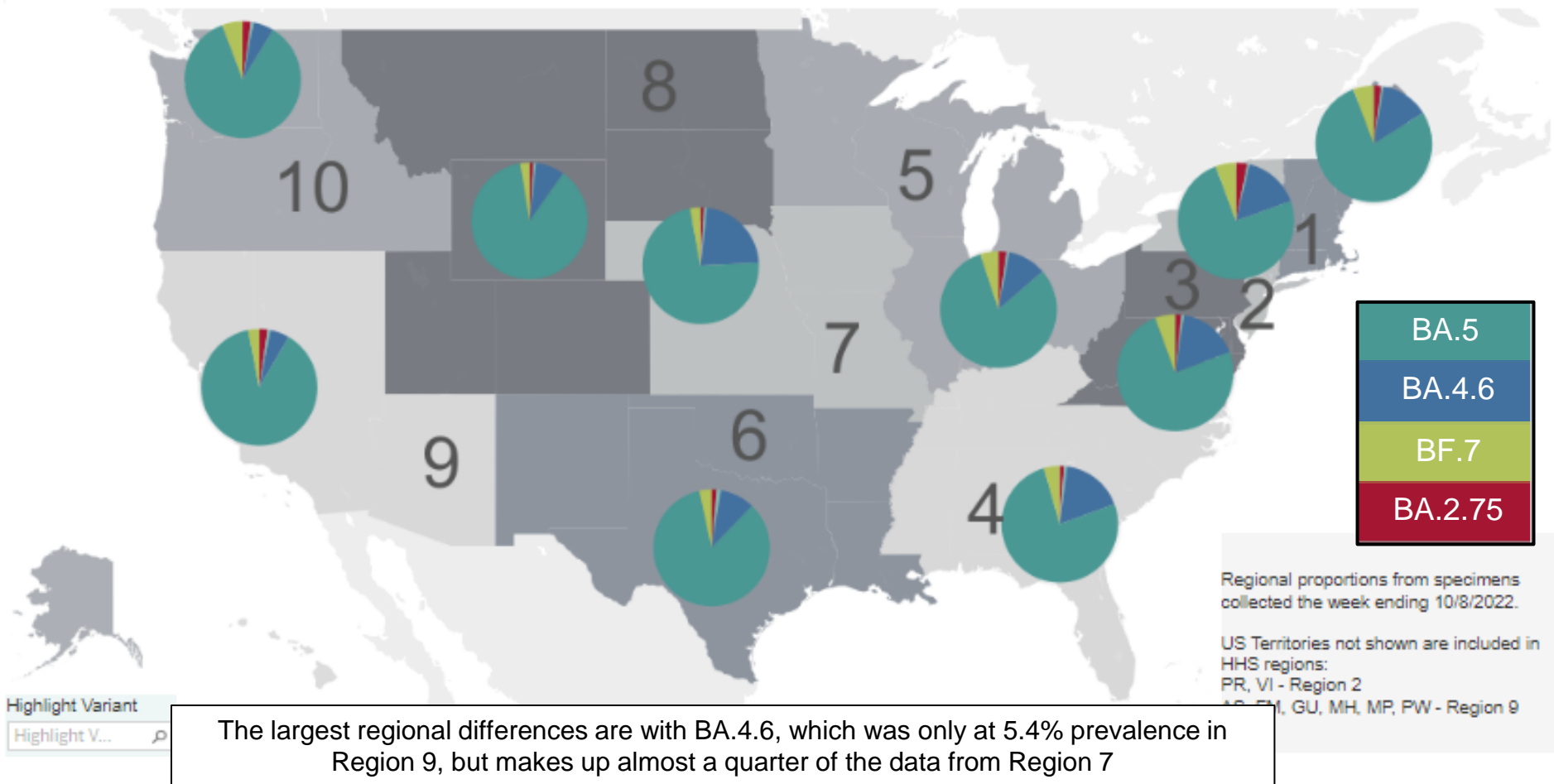
\* Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all weeks displayed.

\*\* These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later dates

# AY.1-AY.133 and their sublineages are aggregated with B.1.617.2. BA.1, BA.3 and their sublineages (except BA.1.1 and its sublineages) are aggregated with B.1.1.529. Except BA.2.12.1, BA.2.75 and their sublineages, BA.2 sublineages are aggregated with BA.2. Except BA.4.6, sublineages of BA.4 are aggregated to BA.4. Except BF.7, sublineages of BA.5 are aggregated to BA.5. Sublineages of BA.1.1 and BA.2.75 are aggregated to the parental BA.1.1 and BA.2.75 respectively. Previously, BA.2.75 was aggregated with BA.2, and BF.7 was aggregated with BA.5. Lineages BA.4.6, BF.7, and many BA.2.75 contain the spike substitution R346T.

- It appears that BA.5 is declining but remember that BF.7 is a BA.5 sublineage, which is increasing
- BA.4.6 continues a slow and steady increase
- BA.2.75 increasing for the first time in a few weeks

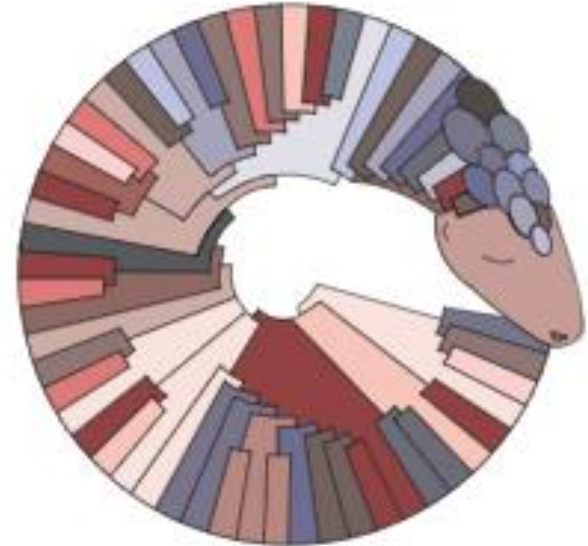
United States: 10/2/2022 – 10/8/2022 NOWCAST









# New pangolin update!

- The pangolin team has finally released an updated version, which will be available on Terra within a few days
- The newly designated lineages (BQ.1.1, BA.2.3.20, etc) and recombinants (XBB, XBC) will now be easier to track
- This week, lineages in the SARS-CoV-2 dashboard will be updated
- Hopefully GISAID will update their pangolin version as well (check the version next to the Pango Lineage field – **Pango v. 4.1.3** is the new version)



# Virological characteristics of the SARS-CoV-2 Omicron BA.2.75 variant

Akatsuki Saito <sup>40</sup> • Tomokazu Tamura <sup>40</sup> • Jiri Zahradnik <sup>40</sup> • ... Terumasa Ikeda   •

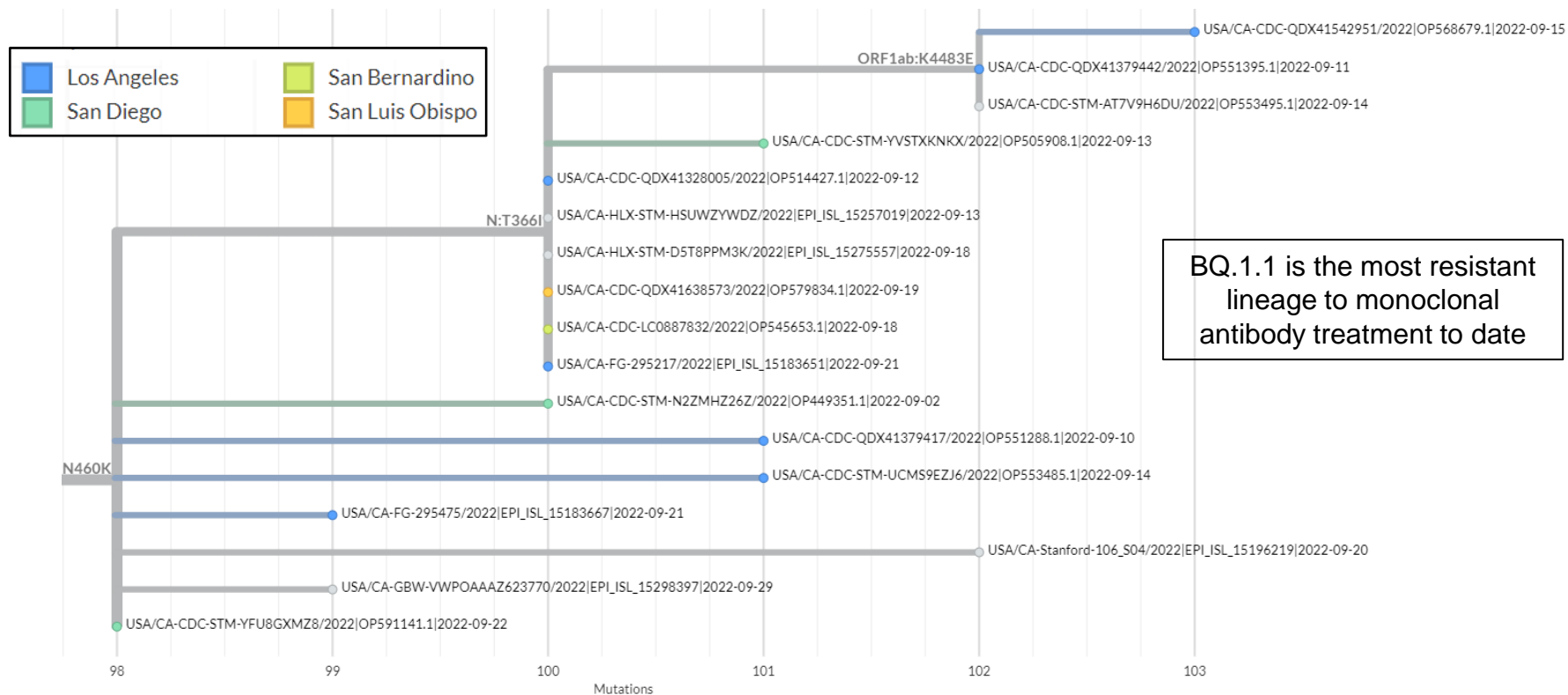
Takasuke Fukuhara   • Kei Sato  <sup>41, 42</sup>  • [Show all authors](#) • [Show footnotes](#)

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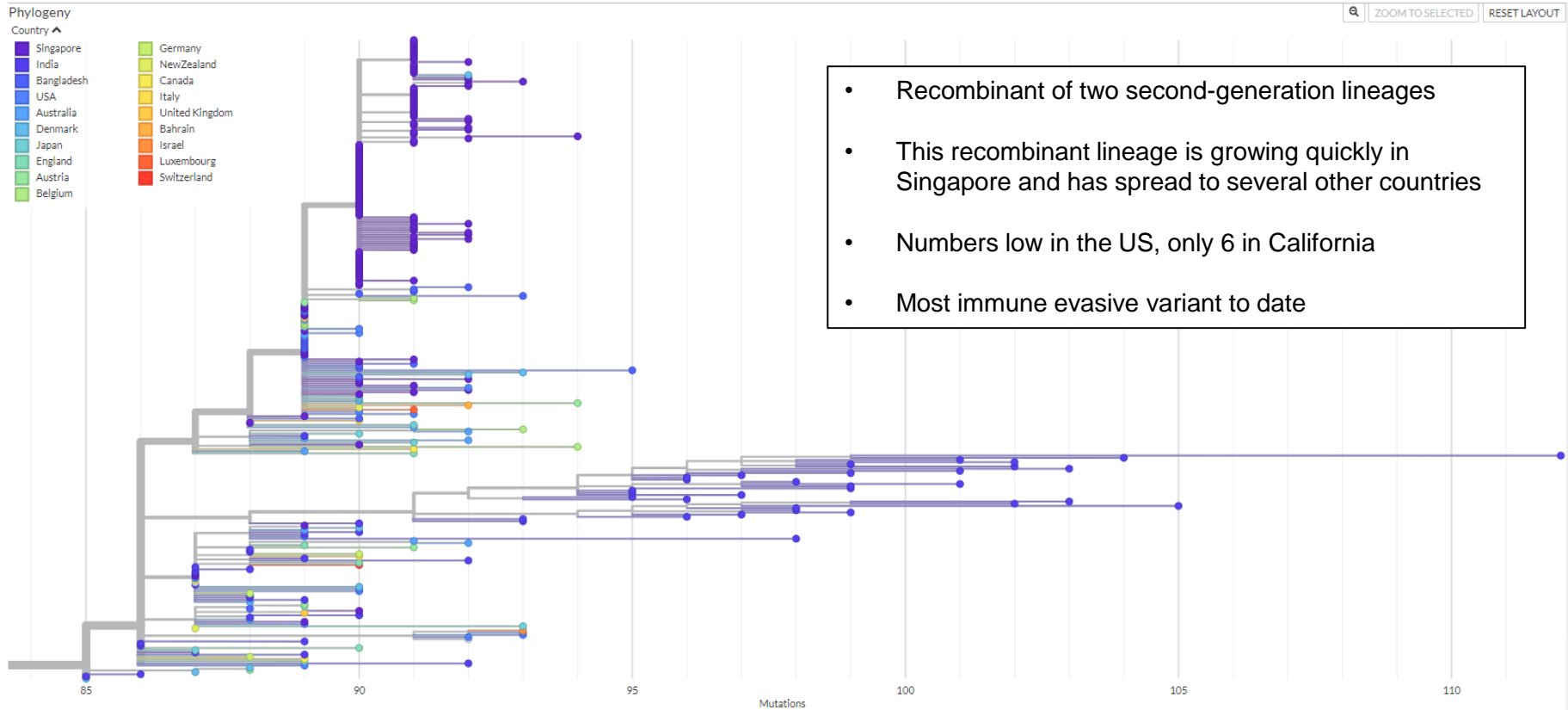
- Study published last week looking at immunogenicity, ACE2 affinity, fusogenicity, and pathogenicity of BA.2.75 compared to Delta, BA.2, and BA.5
- Based on *in vivo* experiments in hamsters
- Major takeaway: BA.2.75 is more transmissible than BA.5, but pathogenicity not significantly different from BA.5
- While BA.2.75 prevalence is still low in the US, it has a greater prevalence in Asia and some European countries

[https://www.cell.com/cell-host-microbe/fulltext/S1931-3128\(22\)00516-9?dgcid=raven\\_jbs\\_aip\\_email#relatedArticles](https://www.cell.com/cell-host-microbe/fulltext/S1931-3128(22)00516-9?dgcid=raven_jbs_aip_email#relatedArticles)

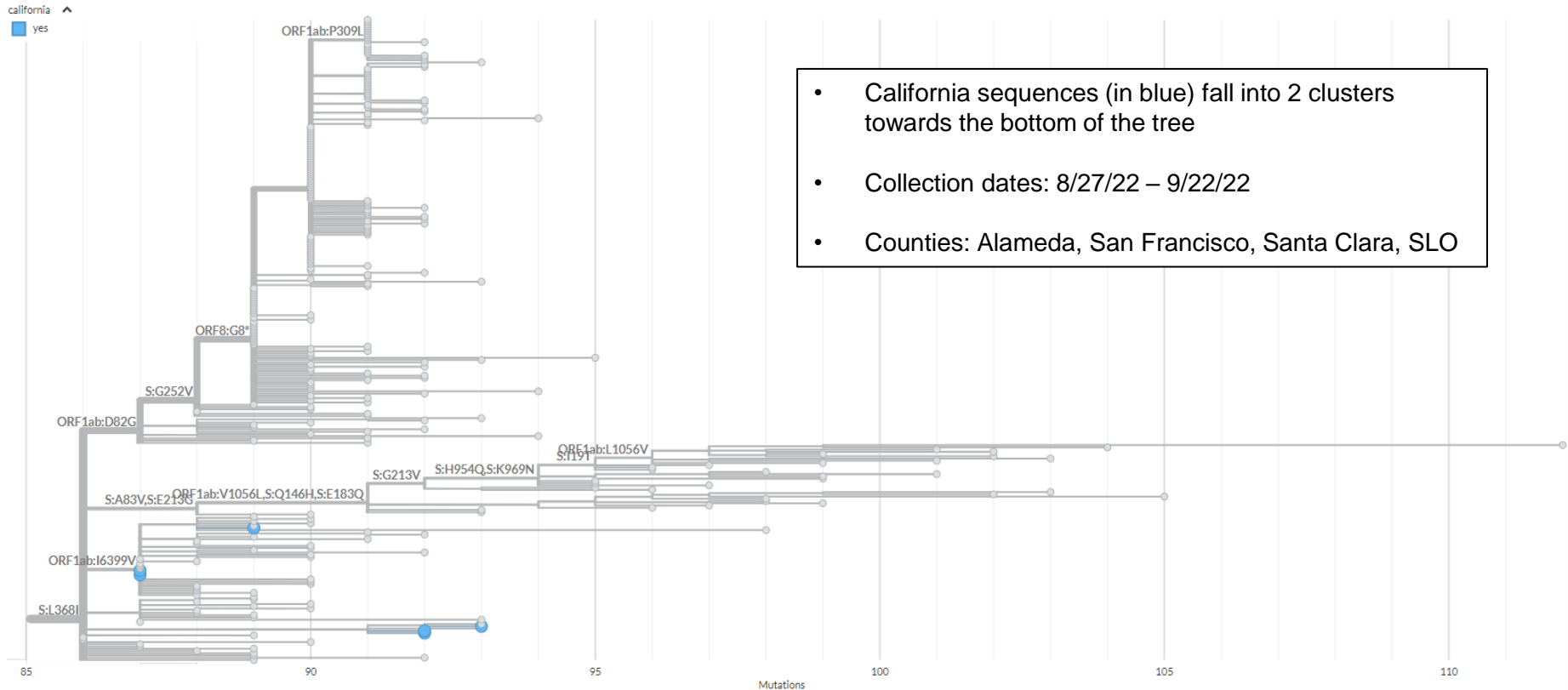
# BQ.1.1s in California (GISAID data, n=17)



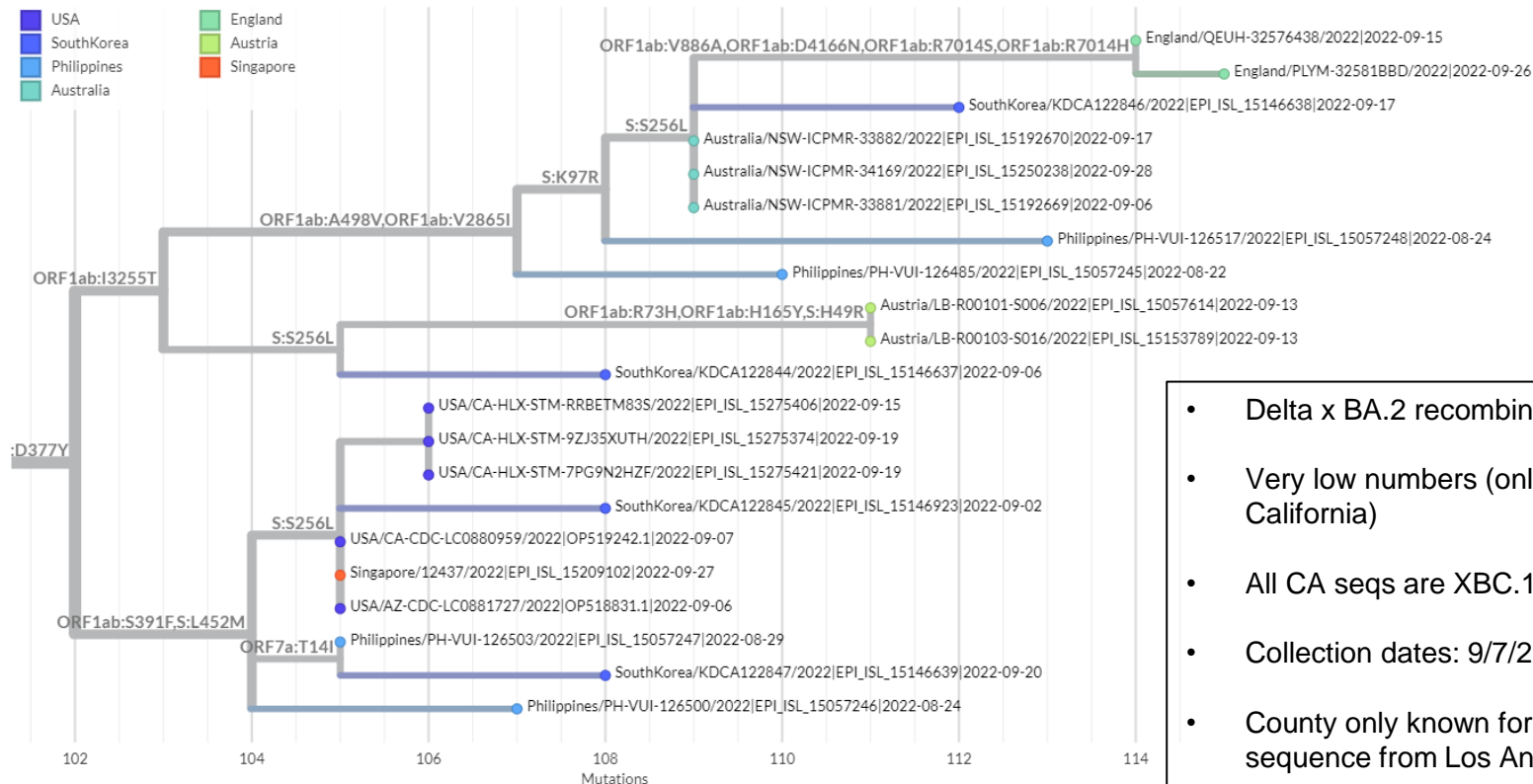
# All XBBs in GISAID (plus 2 sequences not in GISAID yet)



# All XBBs in GISAID (plus 2 sequences not in GISAID yet)



# All XBCs in GISAID



- Delta x BA.2 recombinant
- Very low numbers (only 4 in California)
- All CA seqs are XBC.1
- Collection dates: 9/7/22 – 9/19/22
- County only known for 1 sequence from Los Angeles