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Geneva Centre for
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SARS-CoV-2 genomic surveillance in Geneva: monthly update Weeks 50-52 2023 and Weeks 1-2 2024

Caveat: Data published by our laboratory might reveal some trends regarding local epidemiology. In terms of representability, this data should be interpreted cautiously due to possible cluster effects.

Highlights:

- The **number of positive tests** performed by our laboratory has **progressively decreased since the end of 2023** (Figure 1). The mean positivity rate over 7 sliding days peaked at 49% at the beginning of week 51, and progressively declined to 15% at the end of week 2. In parallel, the number of positive RSV tests also peaked during week 50 of 2024, while the number of positive influenza tests continues to progressively increase since the beginning of 2024 (more information available at: <https://www.hug.ch/laboratoire-virologie/epidemiologie-virus-respiratoires>).
- **JN.1 and other BA.2.86 derivatives were the most frequently identified variants in sequences** and were identified in more than 2/3 of the sequences at the end of 2023 (Figure 2 and Table 1). Of note, JN.1 replaced EG.5 derivatives in December in the wastewater surveillance data (<https://cov-spectrum.org/stories/wastewater-in-switzerland>);
- Of note, the neutralization capacity against currently circulating derivatives of JN.1 and BA.2.86 elicited by the current mRNA vaccines used in Switzerland is similar to what was observed against the XBB derivative EG.5.
- Few XDD sequences corresponding to a nosocomial cluster have been retrieved in the last sequencing batch. Those are JN.1 – XBB recombinants, which do not appear to have a growth advantage over JN.1 and its descendants based on available data originating from south of Europe.

More information can be found in the monthly national surveillance report available at <https://www.hug.ch/centre-maladies-virales-emergentes/programme-sequencage-national-du-sars-cov-2>

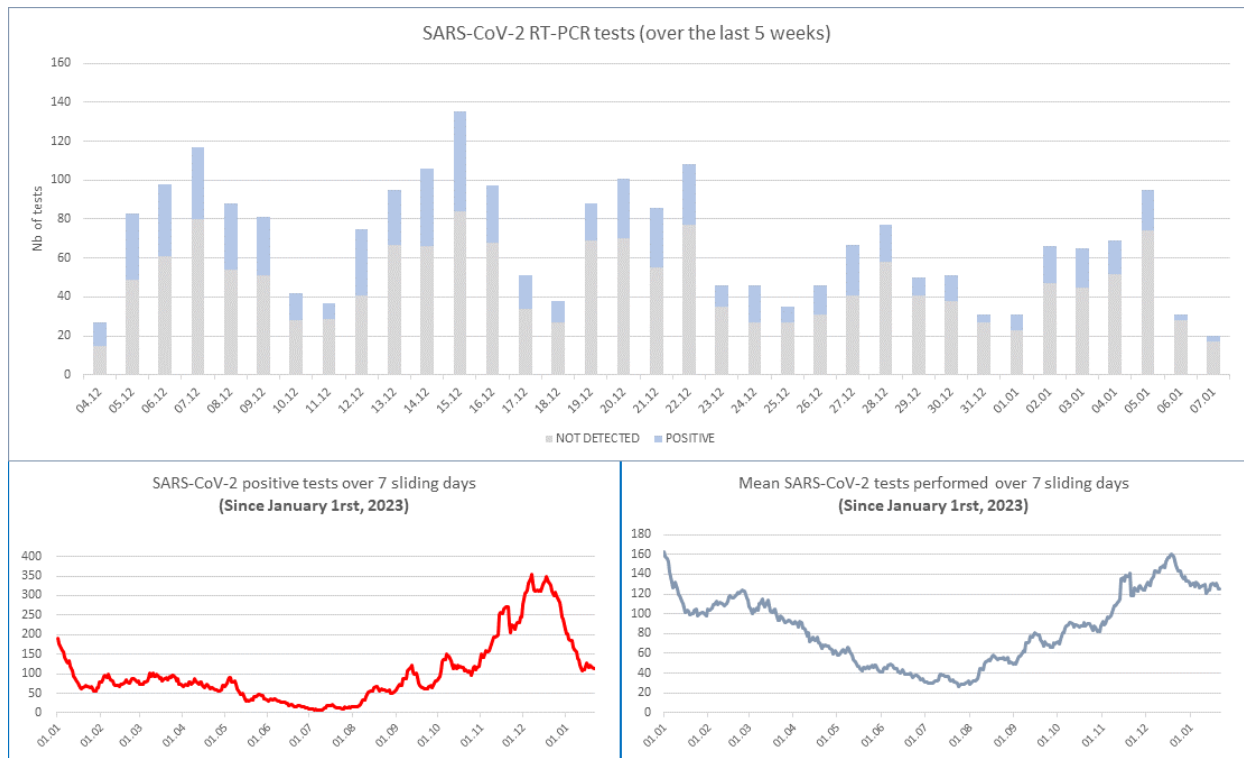


Figure 1: Number of SARS-CoV-2 tests performed at the HUG laboratory of virology (per day). Positive tests are displayed in light blue (top). Bottom left: SARS-CoV-2 positive tests over 7 sliding days. Bottom right: mean SARS-CoV-2 tests performed over 7 sliding days.

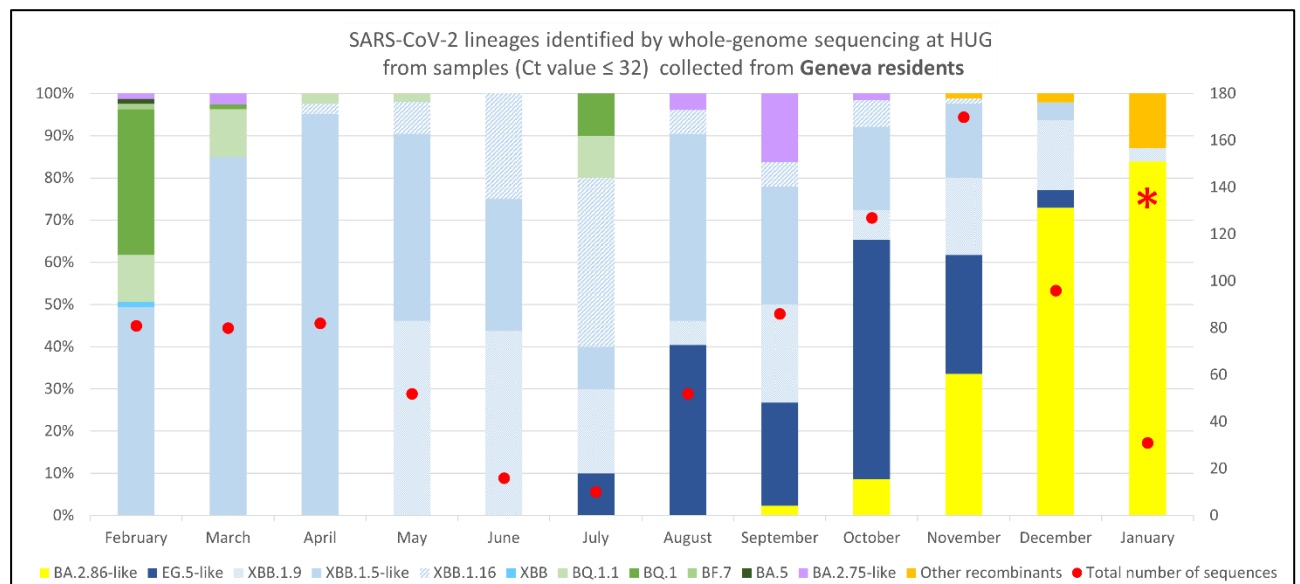


Figure 2: SARS-CoV-2 lineages identified by whole-genome sequencing at HUG from samples (Ct-value ≤32) collected from Geneva residents (Sentinella specimens excluded). A total of 883 sequences were included in this analysis. Note that a total of 906 sequences were produced during 2023.

BQ.1, BQ.1.1 and BF.7 (here depicted in green) are all BA.5 derivatives. EG.5-like variants are descendent lineages of XBB.1.9.2, which has the same spike amino acid profile as XBB.1.5. BA.2.86 is a highly divergent variant first identified in July 2023, carrying more than 30 different mutations in the Spike protein compared to the previous XBB lineages. JN.1, the most competitive of the BA.2.86 sublineages, displays an additional spike mutation (L455S).

Table 1: Details of the BA.2.86 sublineages retrieved in December 2023.

	BA.2.86.1	JN.1	JN.1.1	JN.1.3	JN.1.4	JN.1.6	Others (EG.5-like, etc.)	Total
Week 49	1		1	1	1		2	6
Week 50	2	14	5			1		22
Week 51	1	11	3		1	1	4	21
Total	4	25	9	1	2	2	6	49

The laboratory of virology of the Geneva University Hospitals as a sentinel site for the Geneva area

The number of tests (PCR and antigen tests) performed at the Geneva University Hospitals (HUG) represented around 71% (1000/1404), 78% (920/1173), 79% (882/1111) and 87% (870/1004) of the total number of tests performed in the canton of Geneva during weeks 51, 52 of 2023 and 1 and 2 of 2024, respectively. Roughly 71% (309/433), 75% (215/288), 72% (162/226) and 83% (110/133) of the positive specimens collected in the Geneva area were processed at HUG during weeks 51, 52 of 2023 and 1 and 2 of 2024, respectively. In addition, 113/879 specimens analyzed in our laboratory were positive during week 3 of 2024. Specimens analyzed at the HUG originate mainly from hospitalized patients.

The number of positive tests in the canton and the total number of tests done during the surveilled weeks are available on the [website of the Federal Office of Public Health](#).

Note that since January 1st, 2024, positive rapid antigenic tests are no longer mandatory to report to the health authorities. They represented around 3% of the total number of tests performed in Geneva at the end of 2023, and 7% of the positive tests over the last 2 weeks of December, 2023.

Methods and collaborations

WGS is conducted in close collaboration with the Health 2030 Genome Center in Geneva and Philippe Le Mercier from the Swiss Institute of Bioinformatics. The national genomic surveillance program has been ongoing in Switzerland since March 1, 2021, and includes specimens collected at the HUG with a Ct-value ≤ 32 . In some instances, sequencing can be done on specimens sent by other laboratories in Switzerland within the surveillance program or by request of the cantonal physician team. Phylogenetic analysis data are produced by Nextstrain in collaboration with Richard Neher's group at the University of Basel. In addition, partial Sanger sequencing may be done by our laboratory.

Geographic distribution, transmission advantage estimates and exact numbers of available sequences over time in the canton of Geneva are available on the CoVSpectrum platform, run by Tanja Stadler's group at ETH Zurich.

These reports are produced in collaboration with the Geneva Cantonal Physician team, which provides information on epidemiological links. Please refer to the EpiScope report (EpiScope | ge.ch) for epidemiological data.

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Geraldine Duc for the Geneva Cantonal Physician team.