1St B.1.1.529 omicron case in the Czechia (Liberec Region)

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SARS VAR 01-12-21 ECDC

Excellent example of GP-epidemiologist – PCR/NGS laboratory –NRL –Bioinformatics cooperation
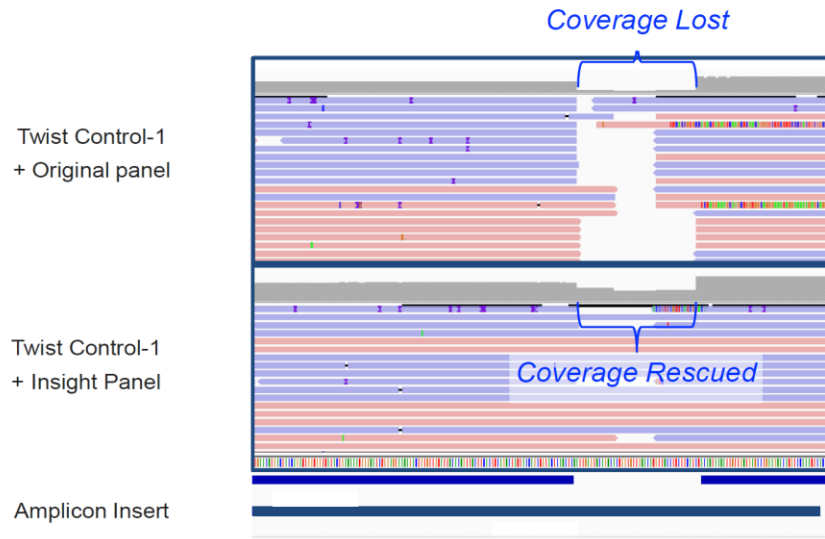
Turnaround time – less than 1,5 day

- **The first notification   - 26th November - noon**
- **Confirmed sequence B.1.1.529 - 27th November evening**

- Friday 26st November –traveler visited GP with mild symptoms and rash
- GP noticed tanny skin, asked about travel, made RDT+ and alarmed regional epidemiologist
- Epidemiologist organized mobile sampling team
- The sample arrived during afternoon to lab – Kogene (N501Y neg, K417T pos, E484K neg, WT pos), Seegene (del69-70 pos, N501Ypos, E484K neg, WT pos)
- NRL recommended to run the NGS on GENEXYS immediately in the lab than to transport it to NRL or other sequencing lab.
- Genexus IonTorrent run – 20 hours
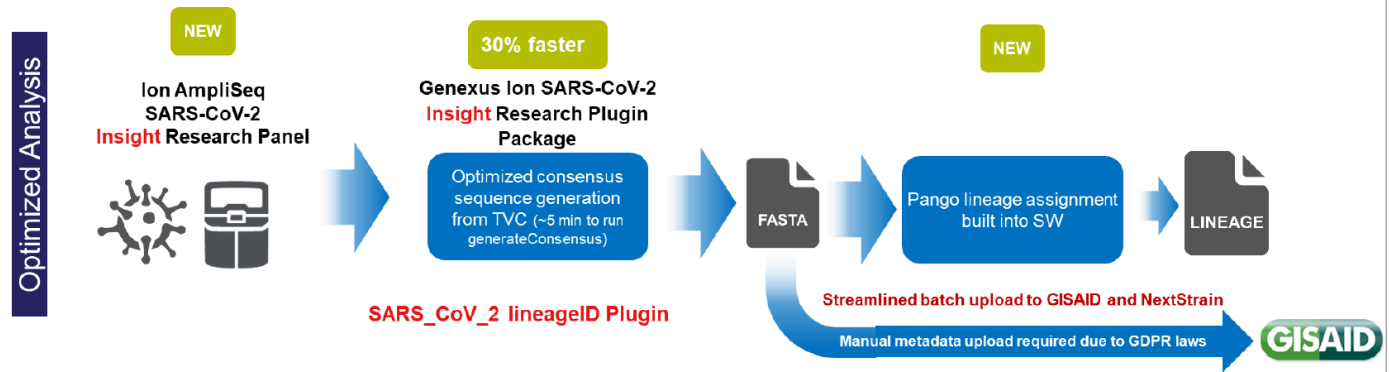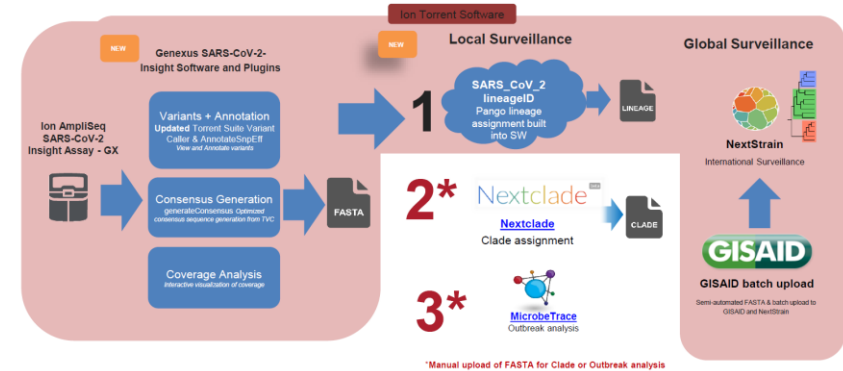
Genexus (Thermofisher Sci.)

Ion AmpliSeq SARS-CoV-2 Insight Research Assay for the Genexus™ Integrated Sequencer

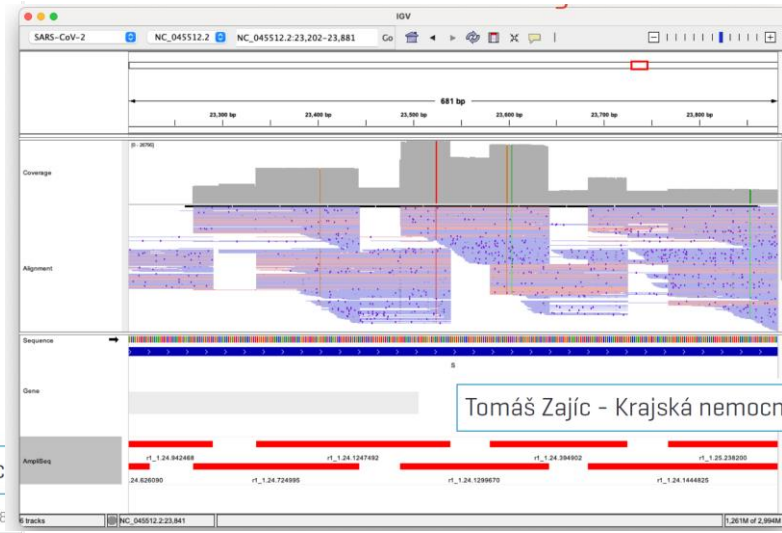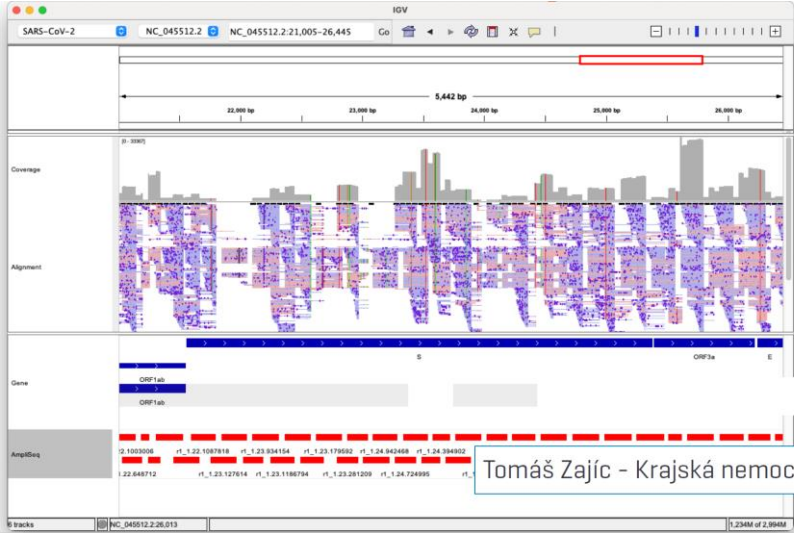Up to 16 samples can be multiplexed on 2 lanes of GX5 chip in a single run

Rapid turnaround time between sample collection, sequencing for efficient public health response

2nd run in the lab using GENEXUS ⟶ omicron GISAID
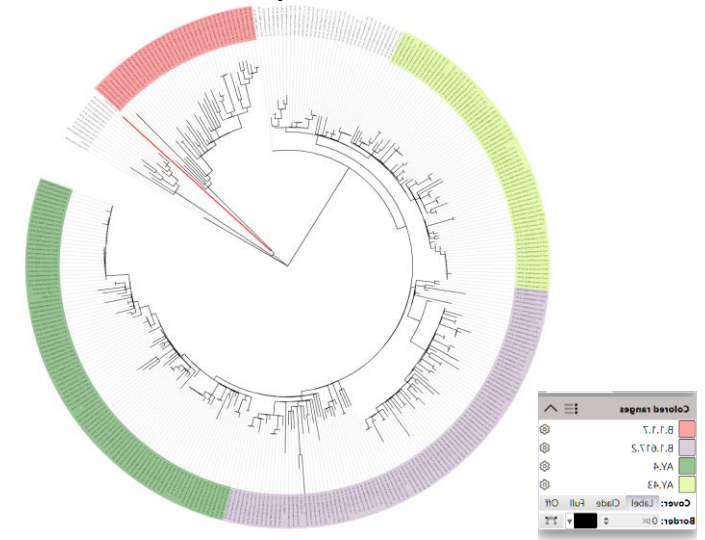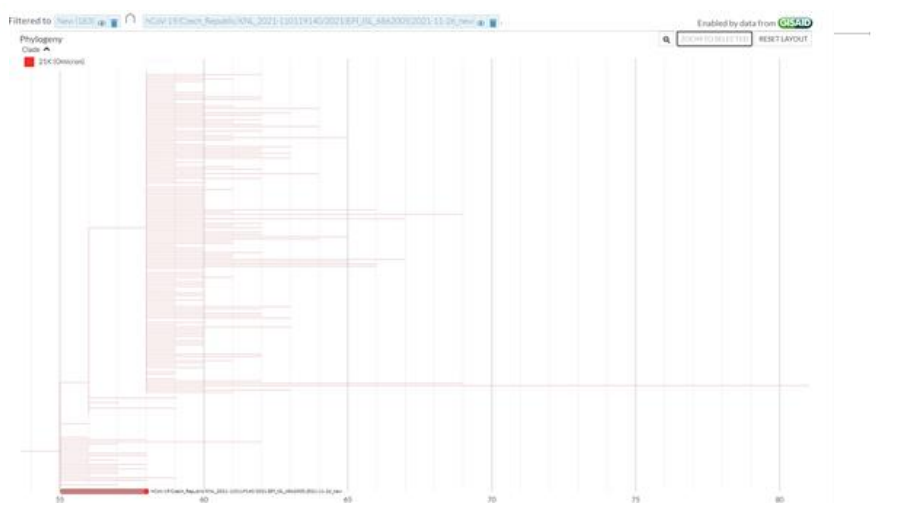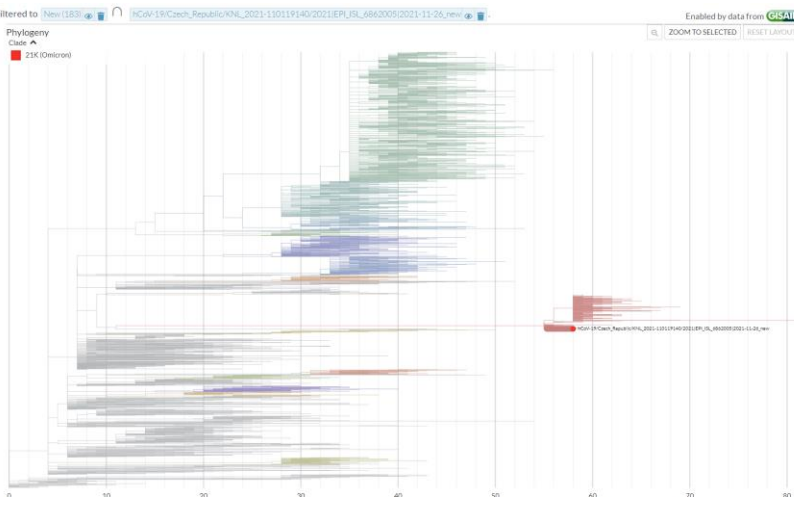

hCoV-19/Czech Republic/KNL_2021-110119140/2021

EPI_ISL_6862005

betacoronavirus

GR

B.1.1.529 (Pango v.3.1.16 2021-11-18), B.1.1.529-like (Scorpio)

NRL – viral culture VERO E6 TMPRSS2,
If succesfull shipment to RIVM

Insertion of 6 nucleotides when compared to the reference WIV04 sequence. Gap of 36 nucleotides when compared to the reference WIV04 sequence. %UniqueMutations 0.07%.

NGS data management

ELIXIR (https://www.elixir-czech.cz/), respektive **CESNET**

Možnost přístupu pro každého s **EduID** automaticky

    https://www.cesnet.cz/sluzby/datova-uloziste/

V případě **COG-CZ** na požádání (třeba u hpaces@img.cas.cz)

Linuxový výpočetní server **eltu1**

    192 procesorů, 3T RAM

    10T diskový prostor pro COG-CZ
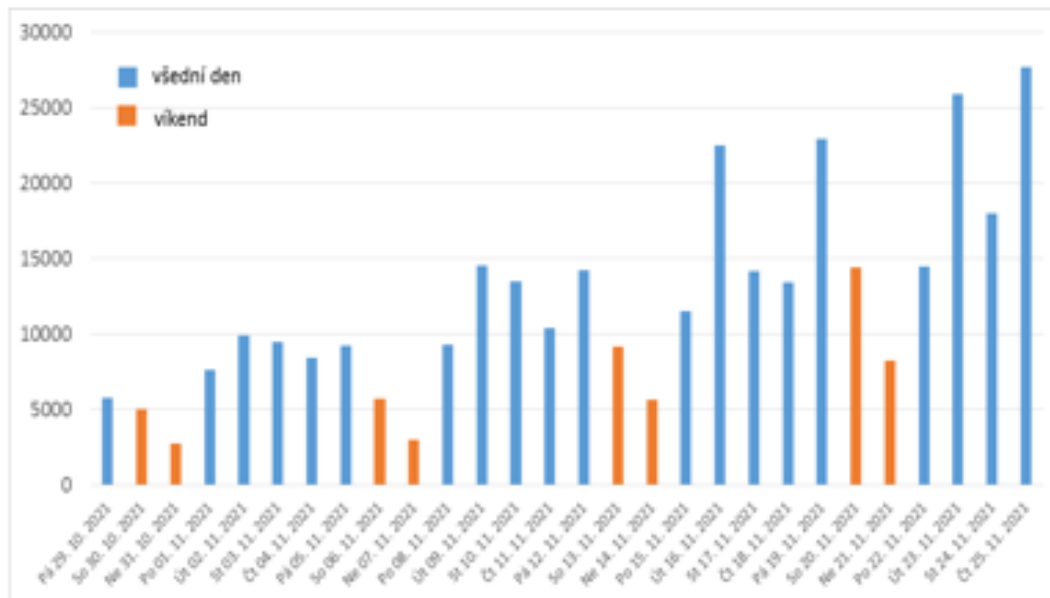
Napojení na datové struktury CESNET (data na raid poli, zálohy v jiné geolokaci atd …)
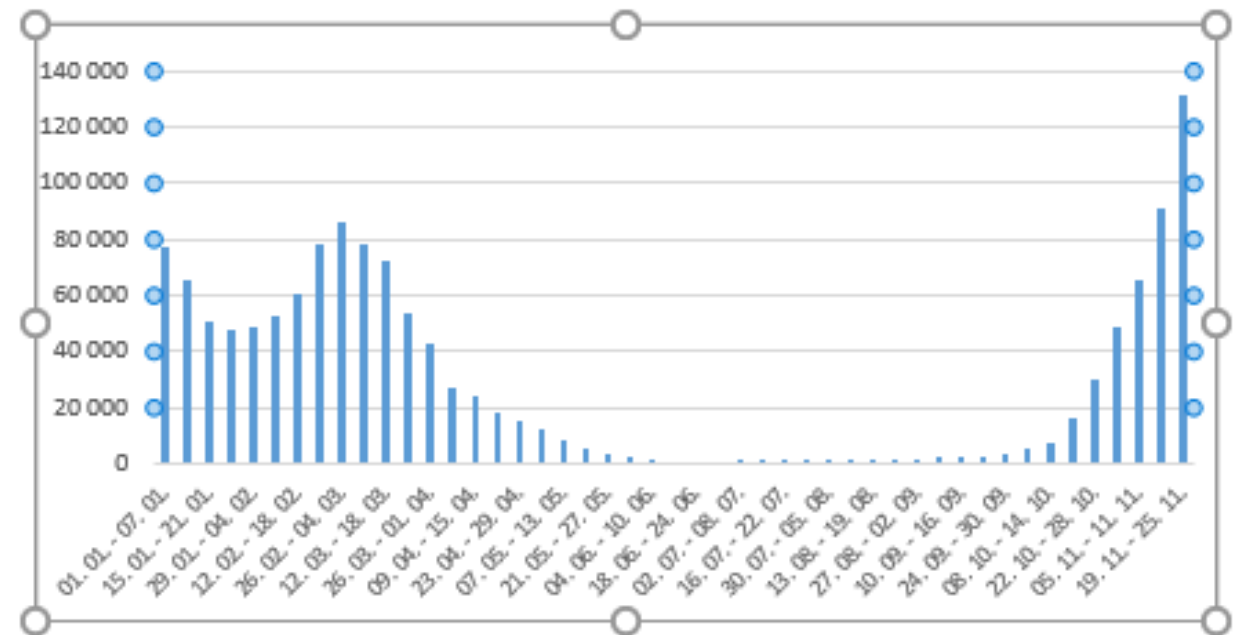
eltu 1: SARS – CoV-2 emergency actualisation resulting from omicron case

100 000 PCRs per day,
Decrease from 35 % positivity to 20 to 25 % positivity during the last week

Graf 1: Počty případů covid-19 za posledních 28 dní

Graf 2: Týdenní počty případů covid-19 od 1. 1. 2021 do 25. 11. 2021

Omicron laboratory measures – no drop off S target
SNP PCR /NGS – bioinformatic data analysis

Imported and traced contact – prioritizatin for lab examination – PCR/SNP – PCR /NGS

SNP – direct probe detection, no melting analysis

SNP PCR CAPACITY versus HIGH INCIDENCE (130 PCR labs, 80 labs SNP PCR) :
- Each PCR lab – at least 10 % of positive samples
- Recmmended SNP: L452R, del69-70 or K417N or N501Y or P681H, E484K – 2 SNPs better
  → Delta/AY.x – delta +E484K – omicron

NGS – less than 0,5 % of samples sequenced, generally in the Czech Reublic – 2 to 3 weeks delay

   8 NGS labs, capacity 50 – 200 samplesper week, + ECDC support + Saxony crossborder
- Regional Hospital Liberec – Genexus 30 hours
- NRL +SVU - 3 -5 working days – MinIon
- NRL - MiSeq nanocartidge (manually prepared NGS library) - 3 -5 working days
- Faculty hospital Brno – 3 to 5 working days – Biomek + MiSeq

LINUX server eltu1:

Setup the"emergency direktory" for any „strange" sample and any sequencing centre – signal from Czech people from ELIXIR tohelp with sequence analysis

Project „Enhancing Whole Genome Sequencing (WGS) and/or Reverse Transcription Polymerase Chain Reaction (RT-PCR) national infrastructures and capacities to respond to the Covid-19 pandemic in the European Union and European Economic Area" had received funding from the European Centre for Disease Prevention and Control under the Grant Agreement number ECDC/HERA/2021/004 ECD.12218.

More information about the project: http://www.szu.cz/ecdc-1

NOTE:

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