

Inter EURLs Working Group on NGS

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Joint Training Course on NGS
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INTER EURLs WORKING GROUP ON NGS

AIM

to promote the use of WGS across the EURLs' networks, build WGS capacity within the EU and ensure liaison with the work of the EURLs and the work of EFSA and ECDC on the WGS mandate sent by the Commission

from
November 2017

Meeting twice a year
(11 meetings done)

- EURL *E. coli*
- EURL *Listeria monocytogenes*
- EURL *Salmonella*
- EURL Coagulase Positive *Staphylococci*
- EURL Parasites
- EURL Foodborne viruses
- EURL AMR
- EURL *Campylobacter*



Inter EURLs WG webpages

- EURL *E. coli*:

<https://www.iss.it/en/web/guest/-/inter-european-union-reference-laboratories-working-group-on-next-generation-sequencing-1>

- EURL *Salmonella*
- EURL *Campylobacter*
- EURL AMR
- EURL *Listeria*
- EURL Coagulase Positive *Staphylococci*
- EURL Parasites
- EURL Foodborne Viruses



Direct link!

[Overview of conducted and planned PTs](#) – curated by EURL Antimicrobial Resistance

[Reference Whole Genome Sequencing collection](#) – curated by EURL *Salmonella*

[Guidance document for WGS-laboratory procedures](#) – curated by EURL Parasites

[Bioinformatics tools for basic analysis of Next Generation Sequencing data](#) – curated by EURL VTEC

[Guidance document for Whole Genome Sequencing - cluster analysis](#) – curated by EURL *Campylobacter*

[Guidance document for NGS-Benchmarking](#) – curated by EURL *Listeria*

[Inventory of training supports](#) – curated by EURL Coagulase Positive *Staphylococci*

[Survey on the use of NGS across the NRLs networks](#) – curated by EURL VTEC

[Supporting document for preparing high quality DNA for Whole Genome Sequencing](#) – curated by EURL VTEC

Documents prepared/1

Drafting of a position paper (in review):

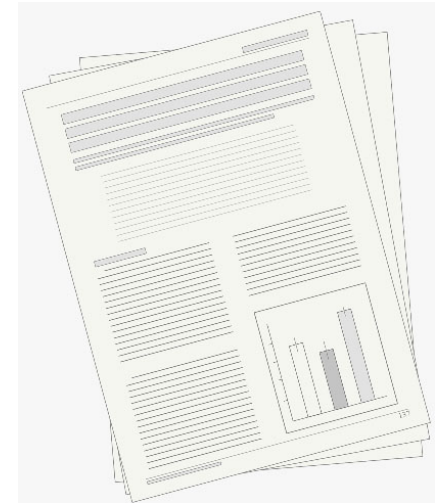
Adoption of NGS across NRLs

Harmonization of procedures

Proficiency tests

Benchmarking guidelines

Training and capacity building



Updated reference **WGS collection** curated by EURL *Salmonella*

Including *E. coli*, *Salmonella*, *Campylobacter*, *Listeria monocytogenes*
and AMR relevant strains

e.g. E. coli: Multiple sequences of the same six **O26 STEC strains** obtained during the 1st PT on WGS (anonymized)

Sequences available upon direct request to: crl.vtec@iss.it

Documents prepared/2

NGS **laboratory procedures** curated by EURL Parasites

DNA extraction from bacteria

DNA extraction from parasites

RNA extraction from viruses

Library preparation

Standard Operating Procedures linked or appended, including protocols developed at the EURLs:

DNA extraction for Lm

DNA extraction for CPS

Library preparation (Illumina) for Lm

Library preparation (for Ion Torrent) for *E. coli*



Documents produced/3

Supporting document for **DNA preparation and quality check** curated by
EURL VTEC

Following a request made by EFSA in the framework of the Joint EFSA-
ECDC Steering Committee on Molecular Typing Data collection

AIM:

supporting the laboratories in the first steps of the NGS protocol, starting
from the experiences on *E. coli*, *Listeria* and *Salmonella*, representing the
first three pathogens for which WGS data collection has started



Documents produced/4

Bioinformatic tools for basic analysis of NGS data - curated by EURL VTEC

The document aims to provide a list of **tools routinely used** by the majority of NRLs and by EURLs for NGS data analysis

Not to be interpreted as a list of validated tools, but as an **information** on those whose use is most spread among the networks of NRLs and EURLs, along with links for an easy and fast access to such tools.

Brief description of analytical steps for basic NGS analysis:

- Quality check
- Trimming
- Assembly
- Seven genes MLST
- Virulotyping
- Serotype identification
- Inference on AMR

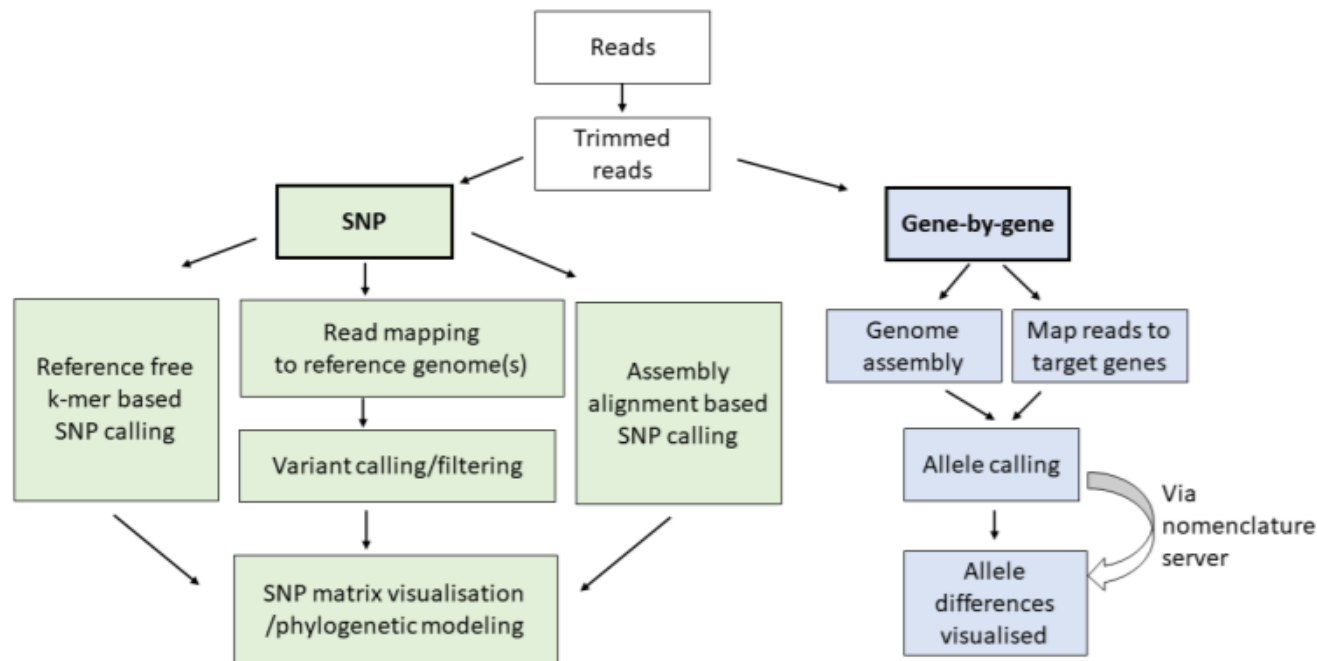
Open source, commercial software, webservers



Documents prepared/5

Guidance document for **WGS - cluster analysis** curated by EURL

Campylobacter



List of tools and pipelines for the different approaches for cluster analysis

Including sections dedicated to visualization tools and interpretation guidelines

Documents produced/6

Guidance document for NGS-Benchmarking, curated by EURL Lm

Quality and quantity metrics

Wet and dry lab analyses

Accuracy, repeatability, reproducibility

Inventory of training supports, curated by EURL CPS

Links to resources, routinely updated

Overview of conducted and planned Proficiency Tests, curated by EURL AMR

The strategy for PT organization will be presented in a dedicated webinar on September 29th for the benefit of the NRLs, in charge of organizing PTs at the Country level – it will be advertised soon!



Inter EURLs initiatives/1

Joint trainings: “Introduction to Bioinformatics for genomic data mining”

- ISS (EURL *E. coli*), Rome, June 2022

24 participants from different NRLs
(3 supported by EURL VTEC)

20 different countries
(19 Member States + 1 Candidate
Country)



- RIVM (EURL *Salmonella*), June 2023 – here we are!

Inter EURLs initiatives/2

“Science Meets Policy” conferences

- First edition: virtual conference, September 2020: over 500 participants from 49 countries worldwide
- **“EU initiatives towards the large-scale use of NGS to tackle foodborne threats”** organized by EFSA and the Inter EURLs WG on NGS
EFSA, Parma, Italy and online, September 5th-6th 2023

Free of charge! – deadline for online participation: September 1st!





Questions?

Suggestions?