



Whole genome sequencing in food-borne outbreaks

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EURL Campylobacter Workshop 2025

Presentation at the 2024 EURL workshop

- ▶ Outcome of questionnaire on cost, experience, capacity of WGS on foodborne pathogens
- ▶ Information on EFSA One Health WGS System for the collection of WGS data of isolates of *Salmonella enterica*, *Listeria monocytogenes* and *Escherichia coli* recovered from food, animals, feed and related environment. *Campylobacter* under development. Connected to ECDC Molecular Typing system with WGS and epidemiological data of isolates recovered from patients.
- ▶ Intention of proposing a Commission Implementing Regulation making WGS mandatory within foodborne outbreak investigations.

Commission Implementing Regulation (EU) 2025/179 on the collection and transmission of molecular analytical data within the frame of epidemiological investigations of food-borne outbreaks

- ▶ Mandatory whole genome sequencing on isolates within foodborne outbreaks:
 - ▶ From feed, animals, food, related environment
 - ▶ *Salmonella enterica*, *Listeria monocytogenes*, *Escherichia coli*, *Campylobacter jejuni* and *Campylobacter coli*
 - ▶ WGS on at least one isolate of each serovar, biotype or molecular type
- ▶ Mandatory collection of isolates from businesses if available
- ▶ Mandatory submission of results to EFSA One Health WGS system
- ▶ Published on 3 February 2025
- ▶ Applicable on 23 August 2026

Commission Implementing Regulation (EU) 2025/179: complementary initiatives

- ▶ INTER-EURL working group for WGS: see presentation
- ▶ FAQs on WGS within foodborne outbreak investigations
 - ▶ https://food.ec.europa.eu/document/download/bb6b197a-cce2-4ebf-aca2-ebb6696c803f_en?filename=diseases_foodborne_zoonoses_reg-2025-179_faqs.pdf
 - ▶ Focus on data sharing and interest for food business operators

Examples EC FAQs on WGS within foodborne outbreak investigations

- ▶ Does the Commission Implementing Regulation (EU) 2025/179 impose WGS to food businesses?
- ▶ What will happen if the WGS profile of a human isolate during an outbreak corresponds with the WGS profile of a certain food isolate present in the EFSA WGS system? Will the food be considered as the source of the outbreak?
- ▶ Can a food source be confirmed if no sample was analysed in the food chain or the same WGS profile was not demonstrated yet?
- ▶ What's the sense of storing WGS in the EFSA WGS system for several years since they do not have an epidemiological link with a recent outbreak?
- ▶ Should other WGS results (e.g. from routine sampling, not suspected of being associated with a foodborne outbreak) be submitted to the EFSA WGS system?

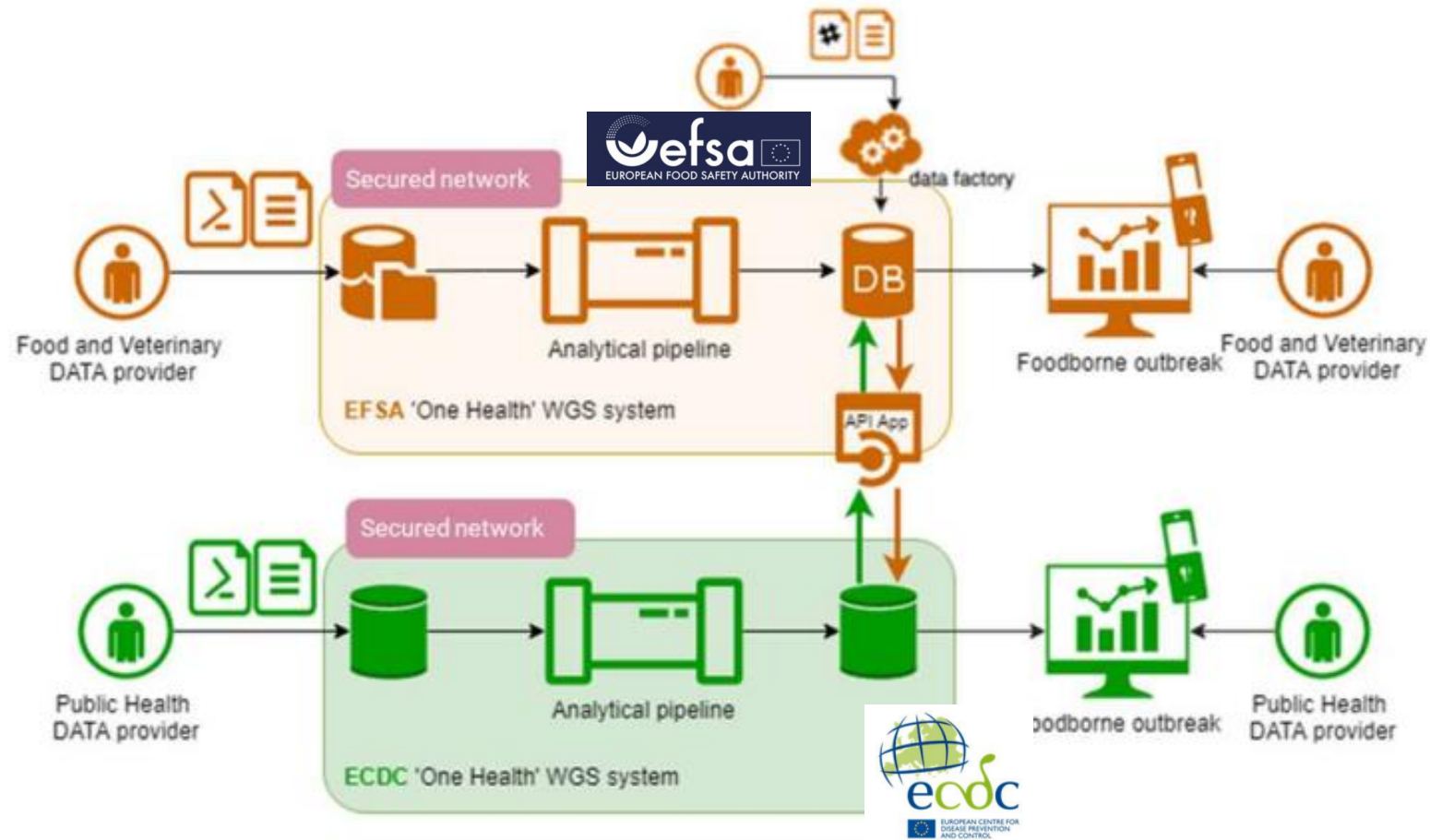
Joint Rapid Outbreak Assessment



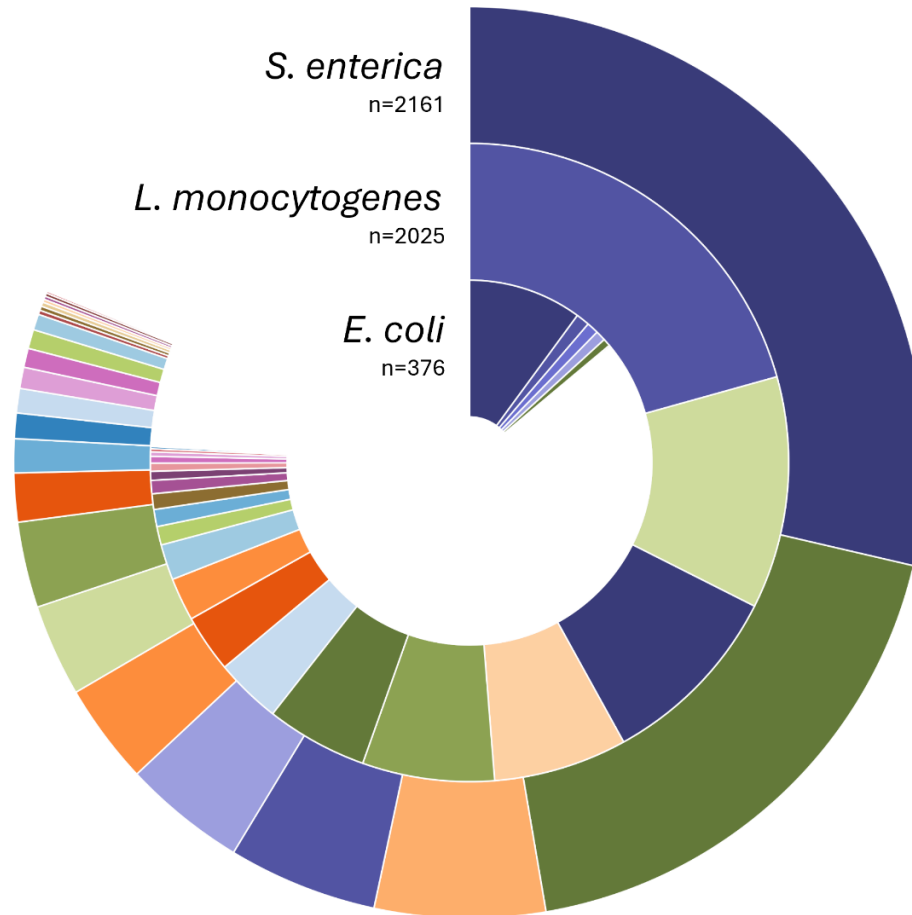
Figure 2. Minimum spanning tree of 32 human (dark blue) and nine non-human (light blue) monophasic *Salmonella* Typhimurium isolates



The EFSA ECDC Joint One Health WGS System



Collection of molecular data by EFSA (4619 profiles so far)



Thank you



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