The training program of the EURL for *E. coli*
during Covid-19

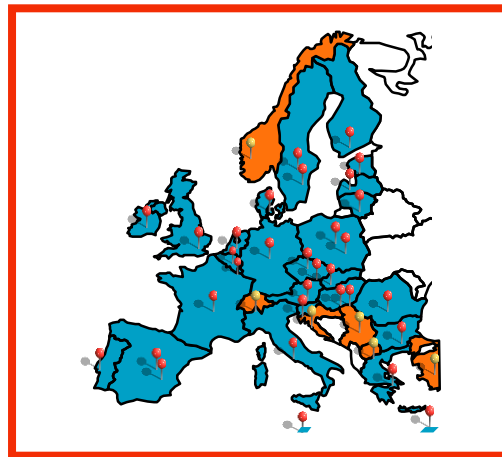Image from: https://accademiadomani.it/pacchetto/

Image from: https://viaggi.corriere.it/weekend/roma-segreta-gli-itinerari-insoliti-e-i-classici-come-non-li-avete-mai-visti/

Istituto Superiore di Sanità, Food Safety, Nutrition and Veterinary Public Health Department
European Reference Laboratory for *Escherichia coli*

Starting in 2020 the EURL for *E. coli* training stages have been organized as online events
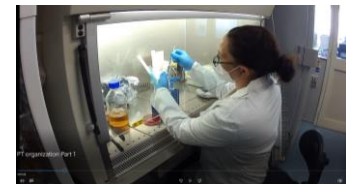
The training sessions lasted 5 days and consisted in:

Presentations by the EURL for *E. coli* staff

Explanation of practical activities

(with the help of ad hoc recorded videos)

Assignments of hands-on to be carried out by the participants:
Request to the participants of preparing specific materials (e.g. food matrix to be spiked, STEC strain for spiking) was sent in advance, as well as some reagents (primers and probes or test DNAs) to the laboratories requesting them

Thorough discussion on the results or difficulties encountered

First online training session:
Design and preparation of proficiency tests (PTs) on the detection of STEC
in food matrices, 5-9 October 2020

Determination of the uncertainty of measurement associated to the inoculum

Definition of the spiking levels to be used in the
interlaboratory study (salad samples spiked with a STEC strain
present in the E. coli reference strains collection of the EURL
for *E. coli*)
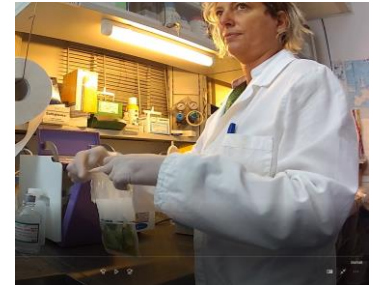
Stability and Homogeneity Tests

Determination of the LOD of the method

Nine scientists participated in the training
One EU NRL and two non-EU NRLs

Second online training session:
identification and characterization of the different groups of pathogenic *E. coli* by Real Time PCR amplification of their virulence genes, 30 November-4 December 2020

38 participants!
3 EU NRLs
8 non-EU NRLs
5 Italian Official Laboratories

Identification of *E. coli* belonging to different pathogroups

Stx-coding genes subtyping

Training sessions in 2021:

Design and preparation of proficiency tests (PTs) on the detection of STEC in food matrices, 21-25 June 2021 (two participants from 1 NRL)
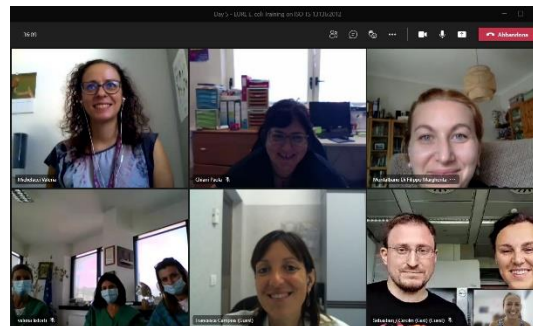
Detection of STEC in food matrices according to the ISO TS 13136:2012 and characterization of the STEC isolated strains

-Contaminated samples shipped to the participating laboratories (6 scientists participating - 1 NRL and 1 Italian OL)

-Application of ISO TS 13136
-Determination of the serogroup of STEC isolated strain
-Determination of *stx*-genes subtypes

Starting from 2021 year we have set up a process to verify the effectiveness of the training programs of the EURL for *E. coli*.

Administration of a questionnaire

80% of compliance: a certificate of achievement of the training objectives
Less than 80%: certificate of attendance (and possible follow-up)

75% of the trainees this year met the training objectives

Training Course on WGS data use:
bioinformatics tools for aiding STEC outbreak investigation

19-20 October, 2020

24 participants
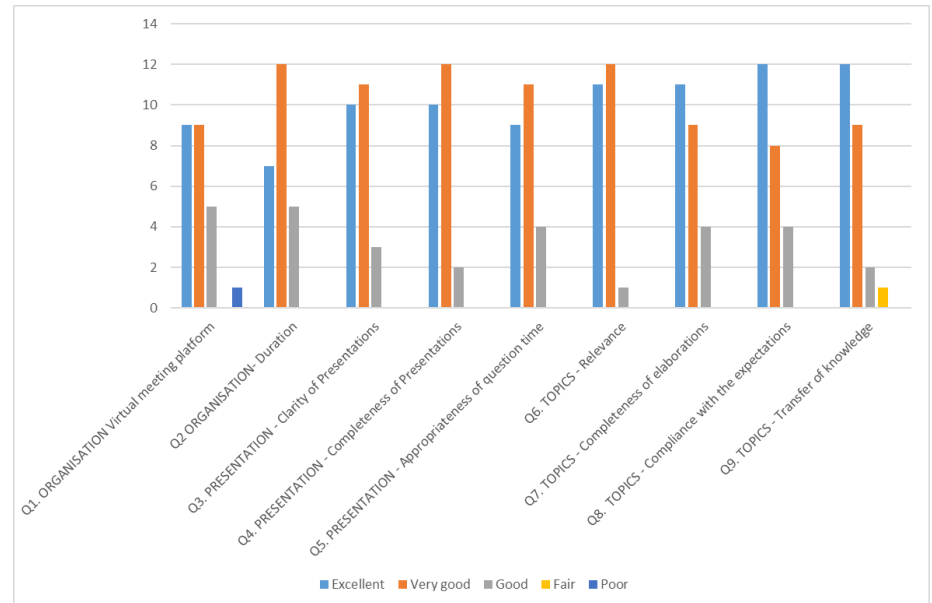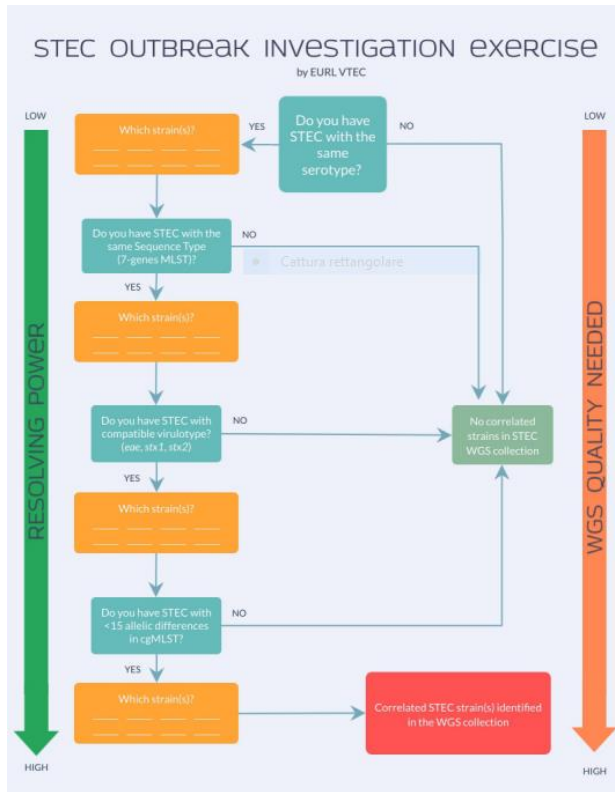
Training Course on WGS data use:
bioinformatics for NGS data mining for typing pathogenic *E. coli*
July 14th-16th, 2021

7 participants
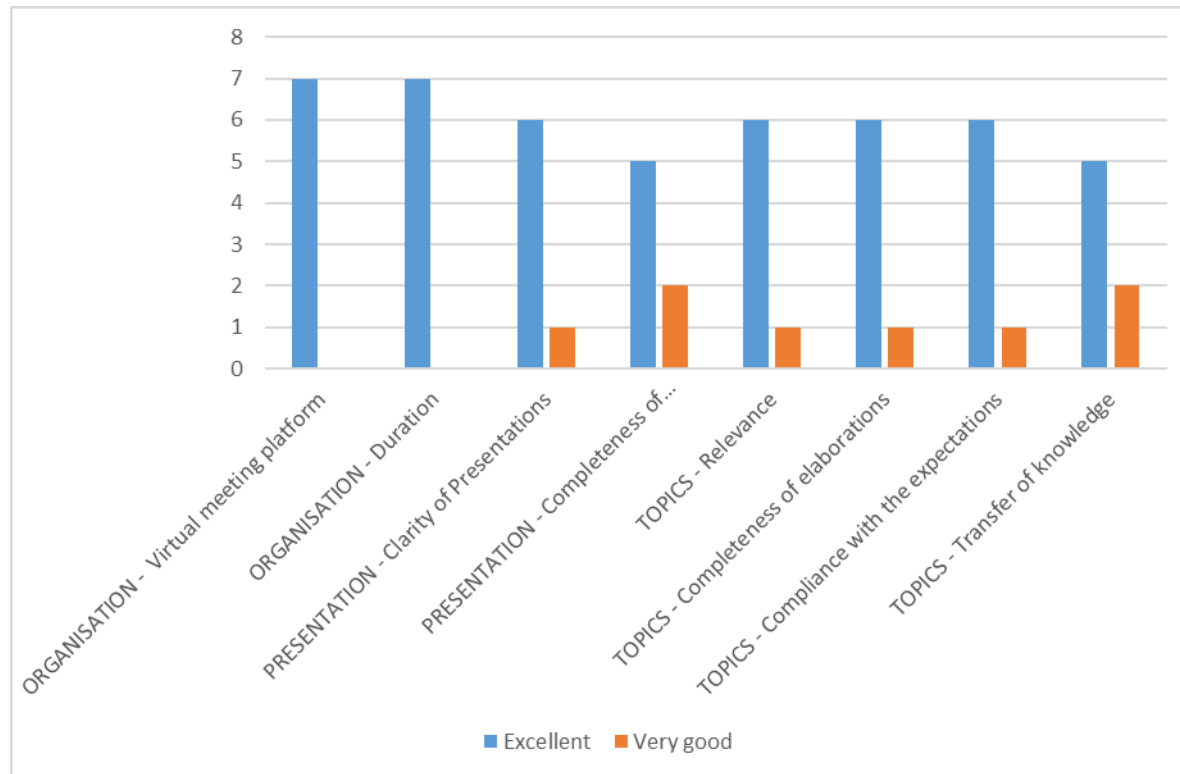
In Summary in 2020 and 2021…

- Online training stages admistered to 55 scientists
- Online courses saw the participation of 31 scientists

We were happy of achieving this goal, nonetheless…

We really were looking forward to hosting trainees at ISS in 2022 ☺

Course on WGS data use: bioinformatics tools for aiding STEC outbreak investigation
7-8 July 2022- Online

PROGRAM

July 7th, Thursday

Time		
09.00	**Start of the training stage**	
09.10	Welcome, housekeeping, and general overview on the training course	**Valeria Michelacci**
	Session 1	
09.20	Introduction to Next Generation Sequencing data formats, quality check and basic analytical tools	**Valeria Michelacci**
09.50	Introduction to the ARIES webserver user-interface	**Valeria Michelacci**
10.20	Basic characterization: 7-genes Multi Locus Sequence Typing (MLST), virulotyping and serotyping	**Federica Gigliucci**
10.50	Explanation of the tasks assigned to the trainees to be carried out during the hands-on session (Quality check and Trimming of WGS, 7-genes MLST, virulotyping and serotyping)	
11.20	**End of session 1**	
	Session 2	
14.00	Results discussion	**Valeria Michelacci** **Federica Gigliucci**
14.30	Assembly and assembly statistics	**Valeria Michelacci**
14.40	Introduction to core genome MLST (cgMLST)	**Federica Gigliucci**
15.00	Understanding the cgMLST and the concept of strain relatedness. Explanation of the tasks assigned to the trainees to be carried out during the hands-on session (Assembly statistics and cgMLST)	**Valeria Michelacci**
16.00	**End of Session 2**	

July 8th, Friday

Time		
	Session 3	
09.00	Results discussion	**Valeria Michelacci** **Federica Gigliucci**
09.30	Introduction to the Outbreak investigation exercise	**Valeria Michelacci**
10.00	Hands on: Outbreak investigation exercise	
	End of session 3	
12.00	Discussion on the outcome of outbreak investigation exercise	**Valeria Michelacci** **Federica Gigliucci** **Rosangela Tozzoli**
13.00	**Closure**	

12 participants
7 from EU NRLs, one paricipant from Maputo University in Mozambico, two from Italian OLs, two from Italian University
75% of the participants met the training objectives, reaching the threshold set for compliance assessed through a dedicated questionnaire

Joint Training Course of the inter EURLs Working Group on NGS: Introduction to Bioinformatics for genomic data mining

Organised by:

EURL VTEC, EURL Listeria monocytogenes, EURL Salmonella,
EURL Coagulase Positive Staphylococci, EURL Parasites, EURL Foodborne viruses,
EURL AMR, EURL Campylobacter

ISS, June 14-15 2022

24 Participants

Trainers from the 8 EURLs and EFSA

19-23 September 2022: Training on the application of ISO TS 13136 and characterisation of STEC isolated strains

Three participants from three NRLs

7-11 September 2022: Training on the Design and organization of PTs on the detection of STEC in food matrices

One participants from an EU-NRLs

So by the end of the year… 40 scientists trained - 12 online

Thank you for your attention!