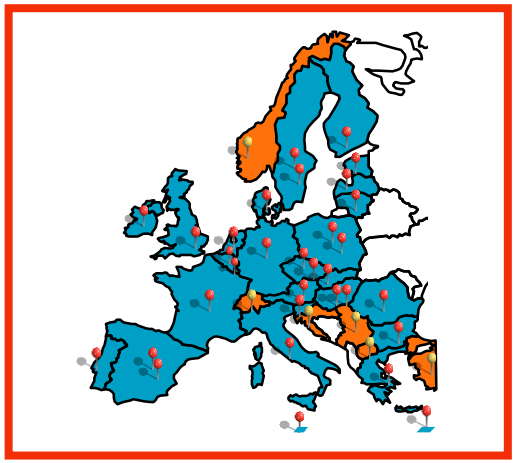
The training program of the EURL for *E. coli*

2025

Theodora Socheri



EU-RL VTEC

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

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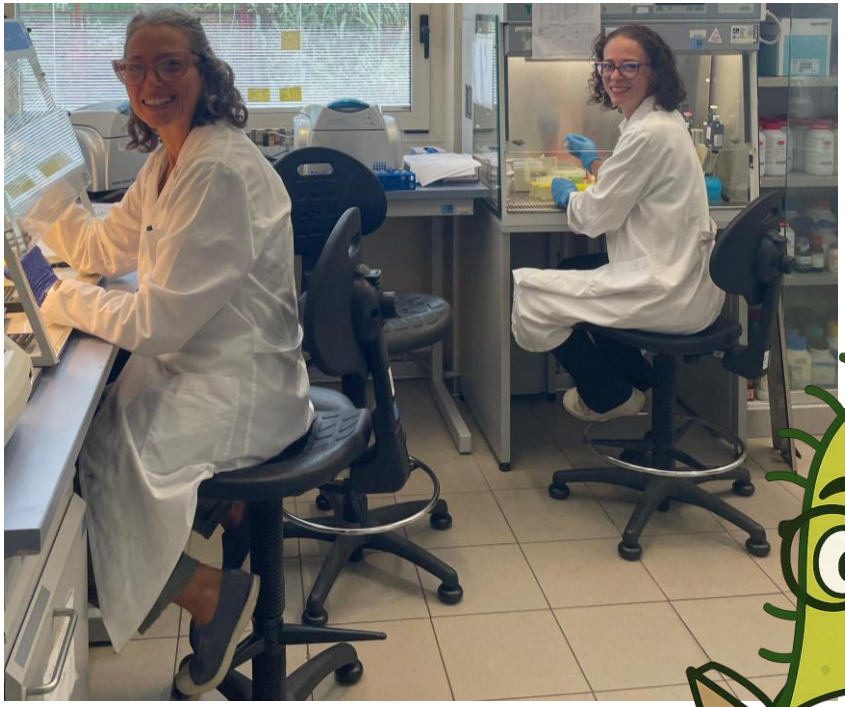
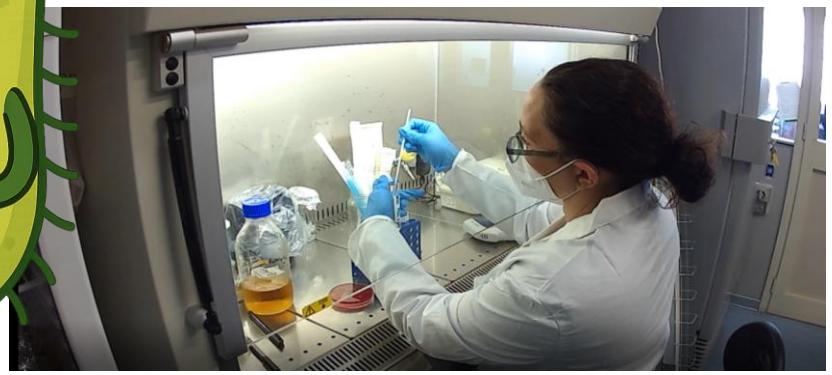
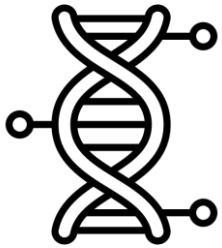




Training activities of the EURL for *E. coli*

- Characterization of pathogenic *E. coli* through NGS (two-days stage)



- STEC detection in food matrices based on the ISO TS 13136:2012 (five days stage)

- Identification & characterization of the different groups of pathogenic *E. coli* (four days stage)

Training on STEC detection in food matrices based on the ISO TS 13136:2012
12-16 May & 19-23 May 2025

EU Reference Laboratory for *E. coli*
Department of Food Safety, Nutrition and Veterinary Public Health
Unit of Food Microbiology and Foodborne Diseases
Istituto Superiore di Sanità

Program for a 5-days training at the EU-RL VTEC, Istituto Superiore di Sanità, Rome, on the detection of STEC in food matrices according to the ISO TS 13136:2012 and the characterization of the isolated STEC strains

Day 1 (14:30-17:30)
- Overview on the activities and procedures of the EURL.
- Opening discussion on the work-plan and overview on the activities to be done during the stage.
- Enrichment of food samples according to the ISO TS 13136:2012
- Introduction to the EURL Laboratory procedure for STEC O104 identification

Day 2 (9:30-17:30)
- DNA purification from food enrichment cultures.
- Real Time PCR for VTEC identification according to the ISO TS 13136:2012
- Real Time PCR for O104 identification
- Isolation of STEC from Real Time PCR-positive food enrichment cultures: streaking the plates

Day 3 (9:30-16:30)
- Picking up and pooling of colonies and backup onto solid media (nutrient agar)
- Confirmation of suspected colonies as STEC by conventional PCR (Annex C of the ISO TS 13136:2012)

Day 4 (9:30-17:30)
- Molecular serogrouping by conventional PCR (EU-RLVTEC_Method_003_Rev1 25/03/2014)
- Identification of stx subtypes by conventional PCR (EU-RL VTEC_Method_006_Rev 1 18/06/2013)

Day 5 (9:30-13:30)
- Agarose gel electrophoresis to visualise the stx-subtyping PCR results
- Analysis of the results obtained
- General discussion on the activities carried out
- Questionnaire on the trainee satisfaction toward the stage

All the five days include explanatory discussions driven by the EURL-VTEC experts and practical sessions carried out by the trainee with an hands on approach, under the supervision of the EURL-VTEC staff.

EU-RL VTEC Training Program ISOTS13136 Rev 3 17/12/2018

Training on STEC detection in food matrices based on the ISO TS 13136:2012

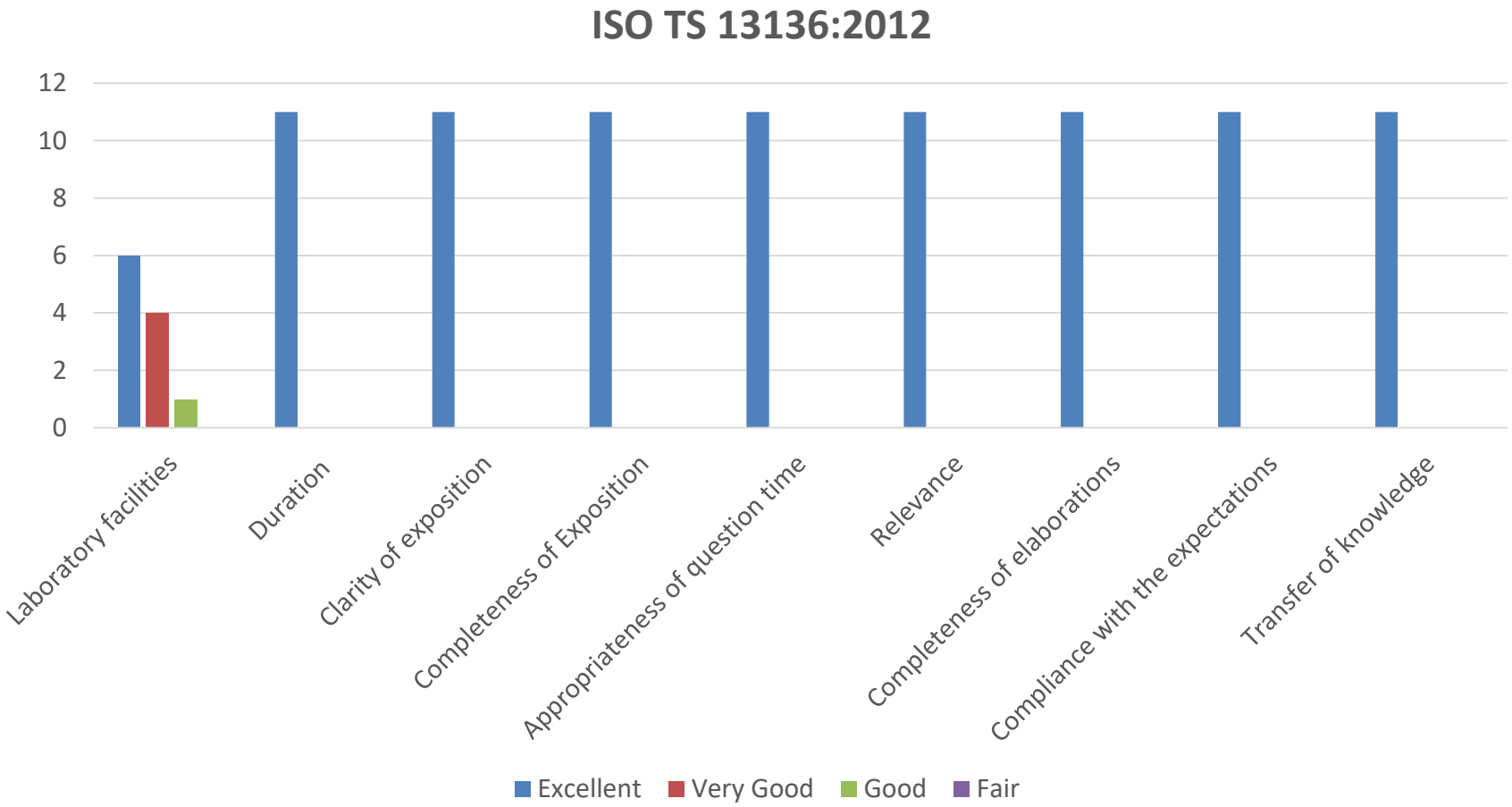
Dates: 12-16 May & 19-23 May 2025

Participants: 12 scientists

Objective: Hands-on training, objectives met

Survey: High satisfaction (100% met objectives)

Satisfaction survey



Joint training course of the Inter EURLs Working Group on NGS

17-18 June 2025 Maison Alfort, France

TUESDAY 17 JUNE 2025

8.45	**Registration (for entering the premises of ANSES)**
09.00	Welcome and general overview of the joint training activities (Adrien Asseré, EURL-*Listeria monocytogenes*)
09.15	Introduction of the inter EURLs Working Group on NGS and the guidance documents released (Valeria Michelacci, EURL-VTEC)
09.30	Introduction to WGS 1. Sequencing platforms & output data (Maroua Sayeb, EURL-*Listeria monocytogenes*) 2. Verification of the integrity of the raw data files (like md5sum) (Angela van Hoek, EURL-*Salmonella*) 3. Bioinformatics analysis of NGS data: approaches and opportunities (command-line tools, commercial software, webservers) (Bo Segerman, EURL- *Campylobacter*)
10.20	**Coffee break**
10.50	Introduction to quality check and trimming (Valeria Michelacci, EURL-VTEC)
11.05	**Hands-on exercises – Quality check and trimming** Quality check and trimming using different tools and platforms. Results interpretation. *FastQC and Positional and Quality Trimming on ARIES* (Valeria Michelacci, EURL-VTEC) *Demo: Quality check and trimming with alternative tools* (Bo Segerman, EURL-*Campylobacter)*
12.45	**Lunch break**
14.00	Introduction to assembly and assembly statistics (Joana Mourão, EURL-AMR)
14.15	**Hands-on exercises – Assembly statistics** Assembly statistics using different tools and platforms. Results interpretation. *Hands-on SPAdes and Quast from ARIES* (Luca De Sabato, EURL-VTEC)
15.15	Introduction to gene detection using mapping approach: tools and data formats (Paolo Vatta, EURL-Parasites)
15.25	**Hands-on exercises – Mapping approach** Demonstration of mapping through different platforms. *Hands-on E. coli virulotyping using a mapping approach* (Rosangela Tozzoli, EURL-VTEC*)* *Demo: Mapping with SeqSphere* (Maroua Sayeb, EURL-*Listeria monocytogenes)*
16.40	Amplicon-based sequencing of viral genomes (Luca De Sabato, EURL-VTEC)
17.00	**End of the first day**

WEDNESDAY 18 JUNE 2025

9.00	Introduction to gene detection using BLAST approach (Marina Cavaiuolo, EURL-CPS)
9.15	**Hands-on exercises – Search of genetic features on contigs** Identification of virulence and AMR genes using different tools and platforms. Results and interpretation. Demonstration of genes identification on contigs through different platforms. *Hands-on ResFinder on CGE webserver* (Joana Mourão, EURL-AMR*)* *Demo: Salmonella virulotyping with SeqSphere* (Angela van Hoek, EURL-*Salmonella)*
10.30	Introduction to genome comparisons: gene-by-gene vs SNP approach (Bo Segerman, EURL-*Campylobacter*)
10.50	**Coffee break**
11.20	Demonstration of gene-by-gene approach through different platforms: ARIES (Rosangela Tozzoli, EURL-VTEC) Starflow (Maroua Sayeb, EURL-*Listeria monocytogenes* and Marina Cavaiuolo, EURL-CPS) SeqSphere (Angela van Hoek, EURL-*Salmonella*)
12.30	**Lunch break**
13.45	**Hands-on exercises – Visualisation of clustering data** Demonstration via Grapetree (Maroua Sayeb, EURL-*Listeria monocytogenes*)
14.00	Parasites WGS: opportunities and challenges (Simone Cacciò, EURL-Parasites)
14.30	The EFSA One Health WGS database and demo (Mirko Rossi, EFSA)
15.30	Wrap up (Adrien Asseré, EURL-*Listeria monocytogenes*)
16.00	**Closure**

Joint training course of the Inter EURLs Working Group on NGS

Dates: 16-18 June 2025

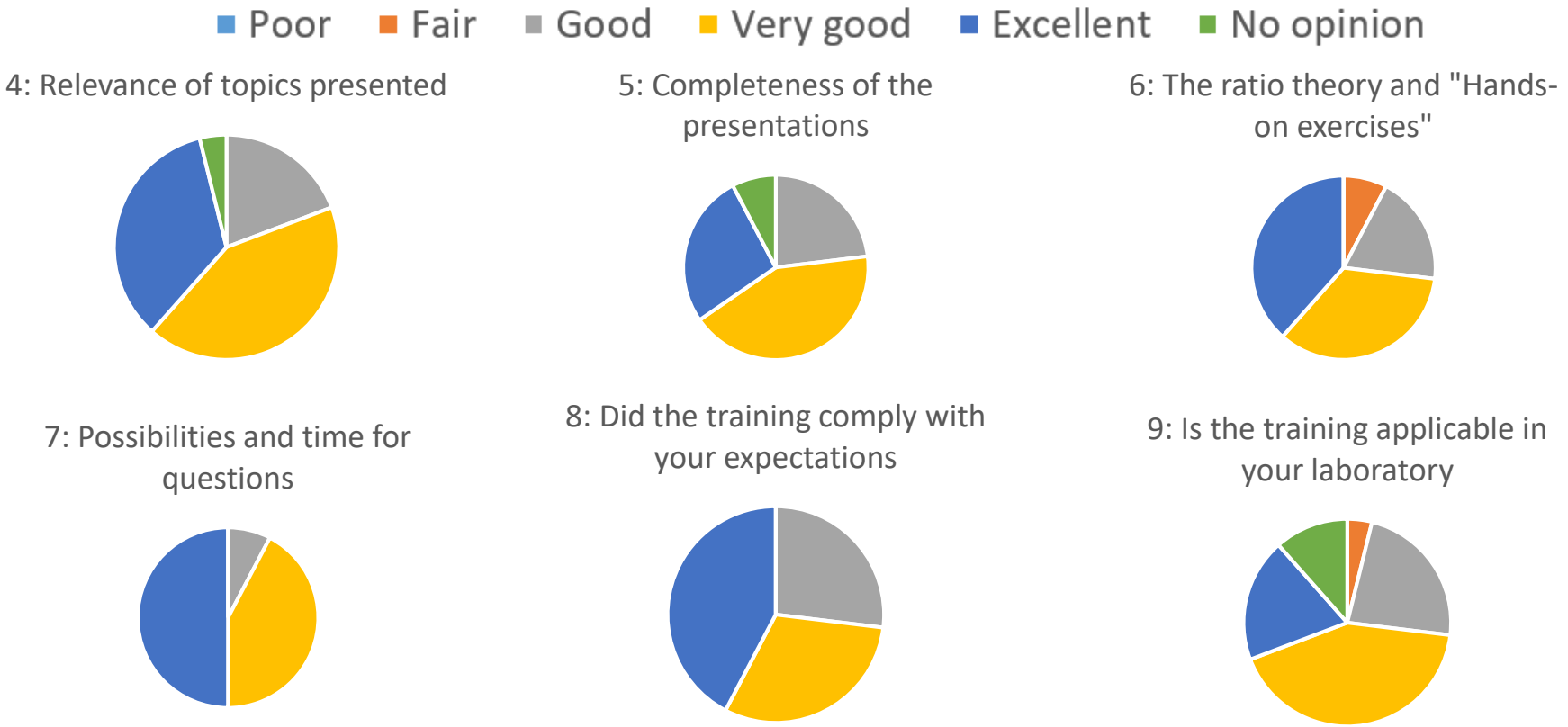
Presentations from EURL for E. coli staff

Assignments of exercises

Live-chat to provide assistance

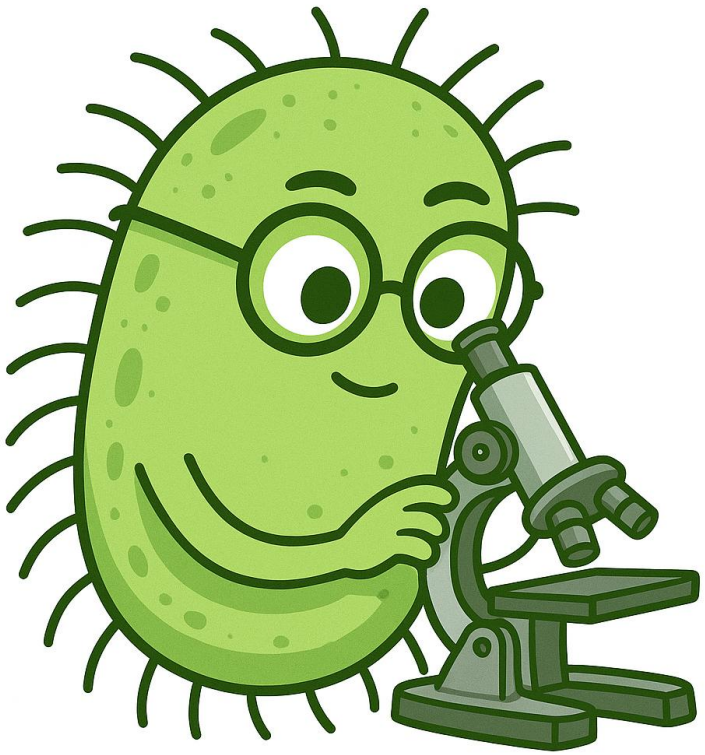
22 participants

Satisfaction survey




COMING
SOON

Identification and characterization of the different groups of pathogenic *E. coli*
11-14 November 2025



EU Reference Laboratory for *E. coli*
Department of Food Safety, Nutrition and Veterinary Public Health
Unit of Food Microbiology and Foodborne Diseases
Istituto Superiore di Sanità

Program for a 4-days training at the EURL-VTEC, Istituto Superiore di Sanità, Rome, on the identification and characterization of the different groups of pathogenic *E. coli* by Real Time PCR amplification of their virulence genes

Day 1 (14:30-17:30)

- Overview of the activities and procedures in place at the EURL.
- Opening discussion on the work-plan and overview of the activities to be done during the stage.
- Preparation of the cultures of test and control strains.

Day 2 (9:30-17:30)

- Preparation of DNA samples for Real Time PCR from test and control strains.
- Real Time PCR for the identification of the *E. coli* pathogroups STEC and EAEC.

Day 3 (9:30-17:30)

- Real Time PCR for the identification of the *E. coli* pathogroups EIEC and ETEC.
- DNA template preparation for the identification of *stx* gene subtypes by conventional PCR.
- *stx*-subtyping by conventional PCR (EU-RL VTEC_Method_006_Rev 1).

Day 4 (9:30-17:30)

- Agarose gel electrophoresis to visualise the *stx*-subtyping PCR results.
- Analysis of the results obtained.
- General discussion on the activities carried out.
- Questionnaire on the trainee satisfaction toward the stage

All the three days include explanatory discussions driven by the EURL-VTEC experts and practical sessions carried out by the trainee with an hands-on approach, under the supervision of the EURL-VTEC staff.

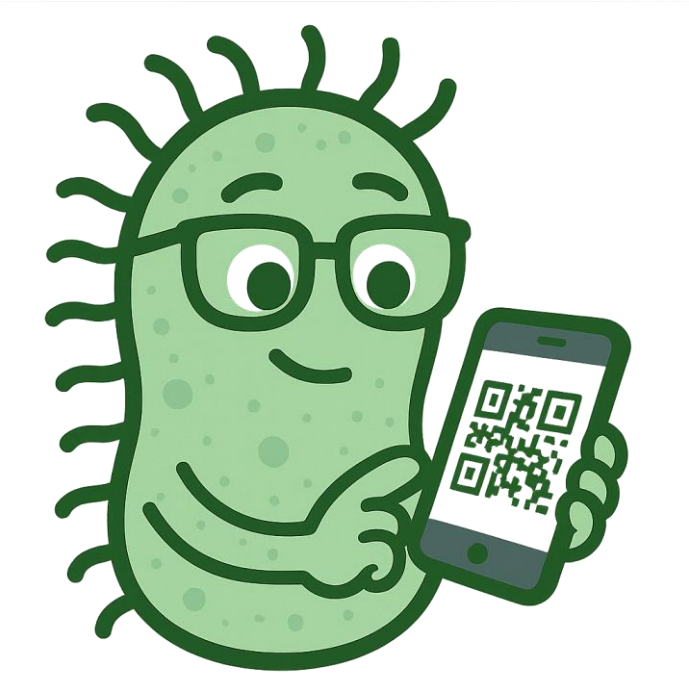
Identification and characterization of the different groups of pathogenic *E. coli*
11-14 November 2025

Dates: 11-14 November 2025

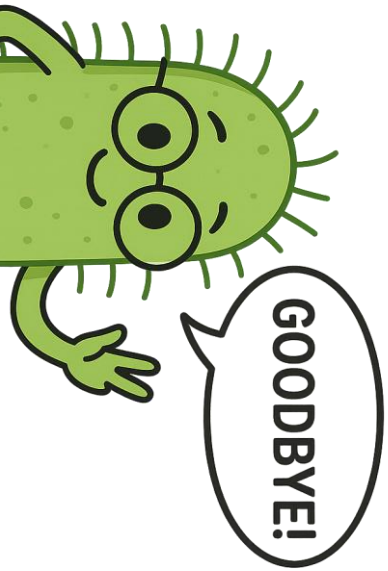
Objective: Hands-on training, individual tasks

Survey: Mandatory survey & a final questionnaire for evaluating the achievement of the training objectives

For more information visit our website **https://www.iss.it/en/vtec-about-us**



At the beginning of every year we post updates and calls for trainings.



Thank you for your attention!

Which E. coli are you?