

European Union Reference Laboratory for *Escherichia coli*: 2006-2017 PT Provider activity



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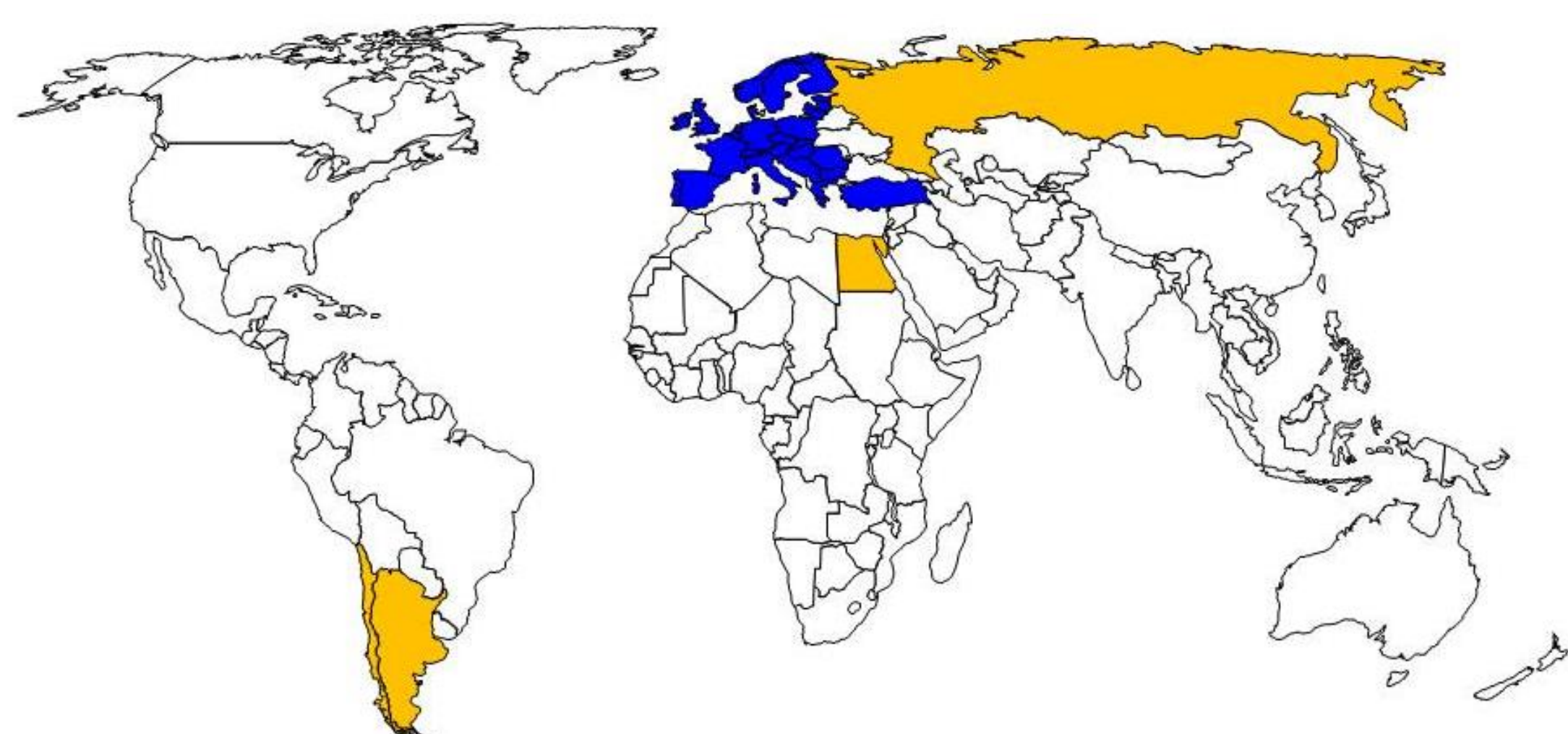


Fig. 1: Network of the NRLs for *E. coli* coordinated by the EURL-VTEC

The EURL for *E. coli* including STEC was established in 2006, according to the Regulation (EC) No. 882/2004 on official controls and is hosted by the Istituto Superiore di Sanità (ISS). As of now, it coordinates a network of 39 EU National Reference Laboratories (NRLs) plus 16 non-EU NRLs from 11 states (Fig. 1). Acting as Italian NRL as well, ISS also coordinates 30 Italian Official Laboratories (OLs).

Main objective of its mandate: to ensure use of standardized methods for the identification and typing of pathogenic *E. coli* strains and their detection in food and animal samples. In particular, it coordinated the development of the Technical Specification ISO TS 13136:2012 on the detection of STEC in food and animal feed, based on the Real Time PCR (RT-PCR) screening of food enrichment cultures.

To evaluate either the methods performances or the proficiency of the NRL network in their application, the EURL organized so far 20 rounds of PT conducted in compliance with the International Standard ISO/IEC 17043:2010

A positive trend was observed in both the number of participating laboratories (Fig. 2) and their proficiencies.

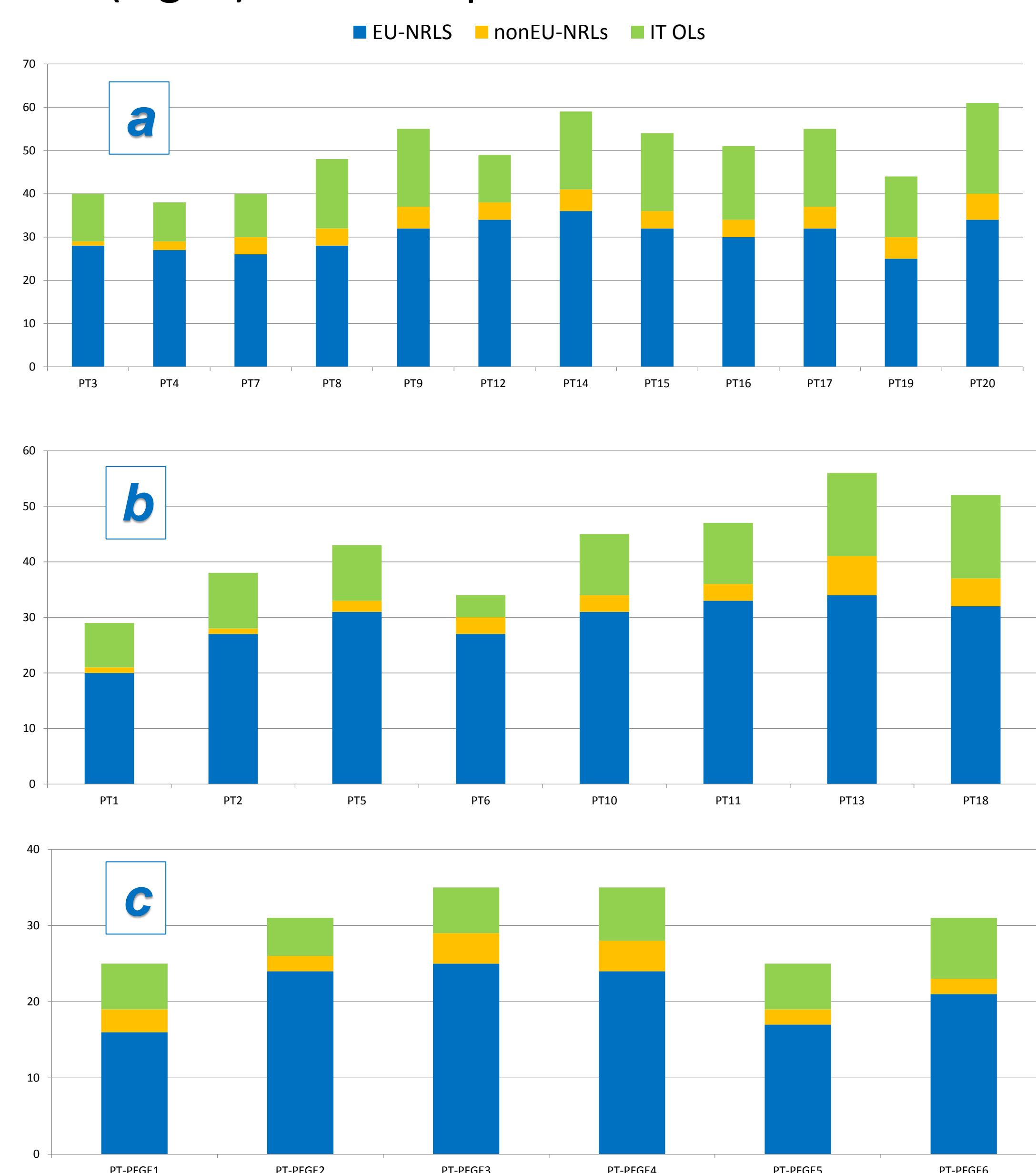
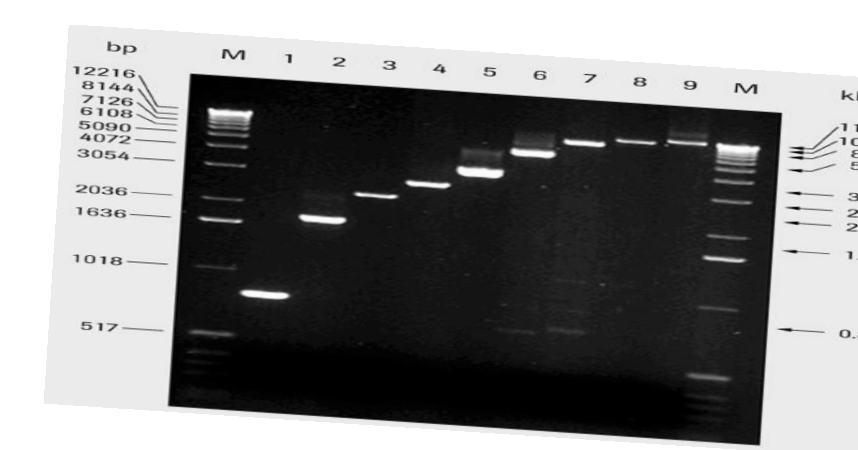


Fig. 2: Trend of the participation in the EURL-VTEC PT program: a) detection and typing in matrices; b) identification and typing of strains; c) PFGE

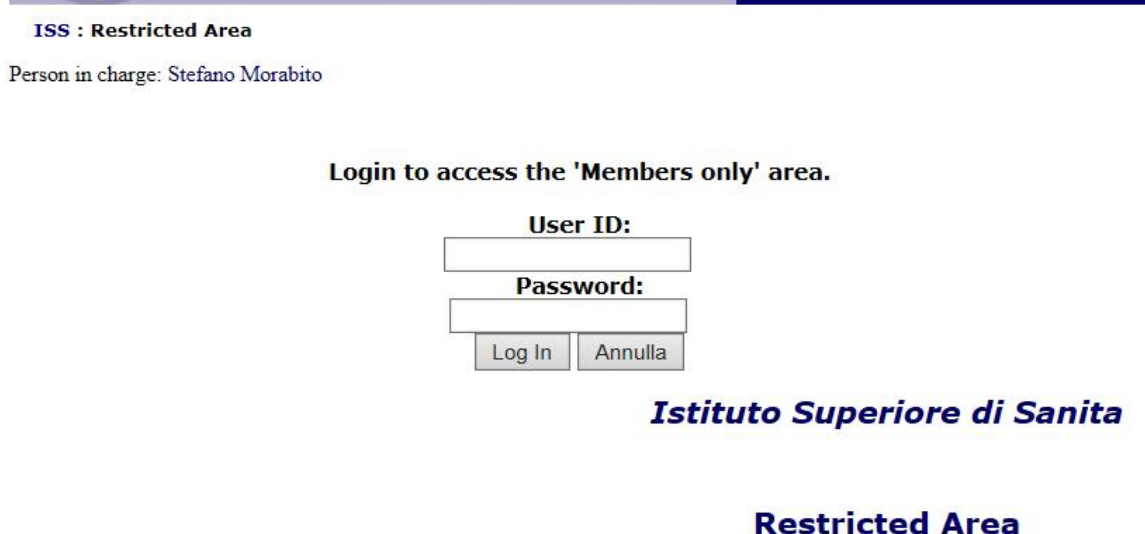
8 PTs on the identification and typing of pathogenic *E. coli* strains:

detection of virulence genes by PCR and identification of the STEC serogroups by serological and molecular methods. 5 of them also included molecular typing by PFGE of STEC as EQA program in the framework of the upcoming collection of PFGE typing data on food and animal isolates of STEC, coordinated by EFSA. The performance of each NRL was evaluated according to the number of PFGE profiles provided that were considered as suitable for the comparison with the PFGE profiles of STEC strains from human infections, collected by the ECDC, according to the standard operating procedures for PFGE profiles interpretation and curation recently published by EFSA.



11 PTs on the detection of STEC in different matrices (carcass swabs, milk, spinach, water, seeds, sprouts, spent irrigation water and ground beef meat) by using the ISO TS 13136:2012.

ongoing PT20 on the detection of STEC in rocket salad, PT-PFGE6 and, for the first time, a voluntary inter-laboratory exercise on NGS of pathogenic *E. coli* (performing whole genome sequencing of the PT-PFGE6 strains to evaluate the quality parameters of the sequences produced and the inter laboratory/platform variability in terms of SNPs in the genomes produced).



The PT results are submitted directly by the laboratories through an online system, using a "Restricted Area" in the PT Section of the EURL-VTEC website.

Conclusions

The control of pathogenic *E. coli* infections represents a challenge due to the complexity of the diagnostic procedures and requires a network of skilled and trained laboratories for their detection in the vehicles of infection. The EURL-VTEC is working to consolidate its network of NRLs, in order to:

Contribute to the knowledge of the epidemiology of STEC infections, not only in Europe

Gather harmonized data on the prevalence of these pathogens in the food samples finalized to the definition of microbiological criteria for STEC

Provide the EC with a network of laboratories operating with standardized operative procedures and tools to ensure a harmonized monitoring of these microorganisms and to face possible emergencies