

Inventory of activities and methods available at the EU National Reference Laboratories (NRLs) for VTEC

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Aims of the Inventory

- To provide the CRL-VTEC and the Commission with the knowledge of the potential capacity existing in the different EU countries for:
 - analytic activities
 - interventions in the case of emergency.
- To prepare a catalogue of the NRL capabilities and activities
- To calibrate the capacity building program towards NRLs

Methods

Self administered questionnaire

 **Community Reference Laboratory for *E.coli***
Department of Food Safety and Veterinary Public Health
Unit of Foodborne Zoonoses and Veterinary Epidemiology
Istituto Superiore di Sanità



QUESTIONNAIRE
ON THE ACTIVITIES, EXPERTISE, AND FACILITIES OF NATIONAL REFERENCE
LABORATORIES (NRLS) FOR *Escherichia coli*, INCLUDING
VEROTOXIGENIC *E. coli* (VTEC) IN THE EU MEMBER STATES

Member State:

1. NATIONAL REFERENCE LABORATORY (NRL) DESCRIPTION

Name
Address:

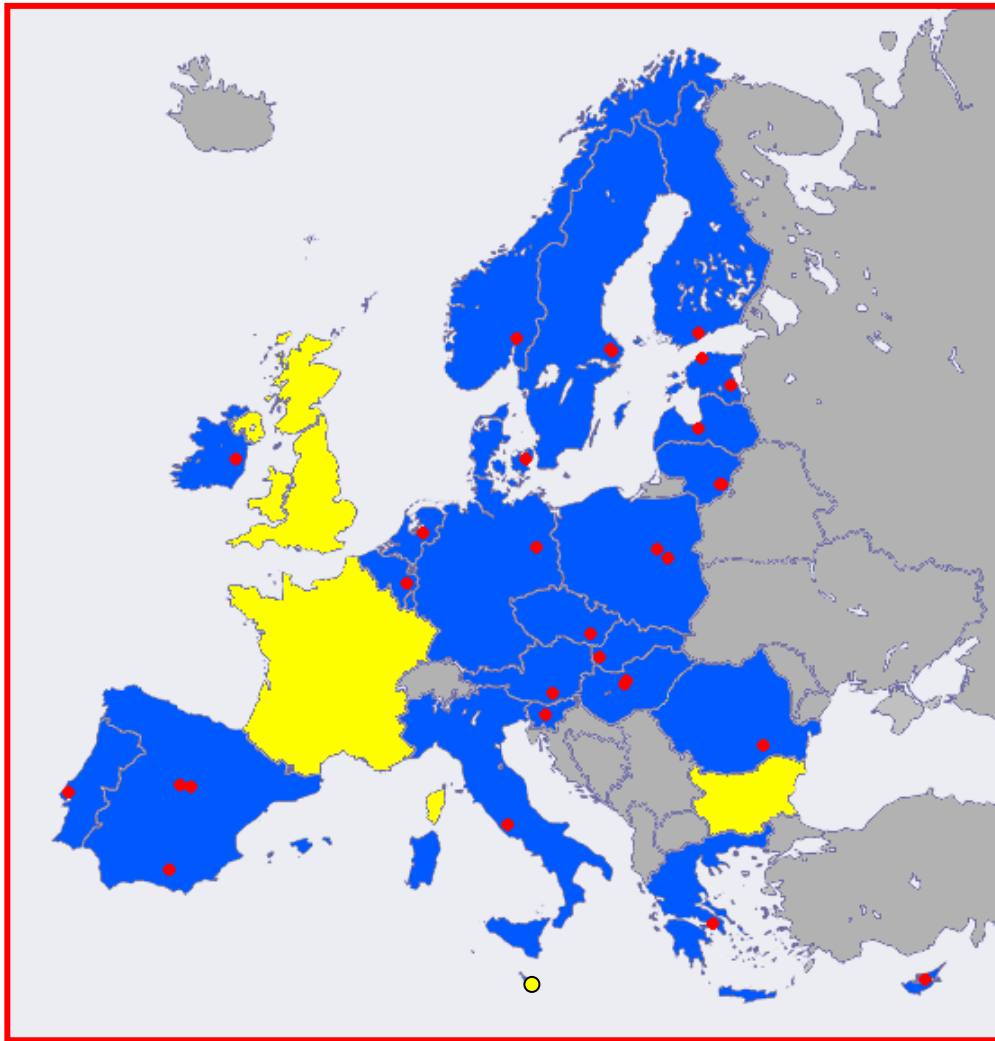
Contact person and contact details (email, tel, fax):
Name
Tel: Fax: E-mail:

Deputy Contact person and contact details (email, tel, fax):
Name
Tel: Fax: E-mail:

Legal status of the Institution:
 Governmental Academic Other

- General information
- Field of activity
- Diagnostic methods
- Monitoring activities
- Expertise
- Facilities
- Data-Base
- Publications
- Needs

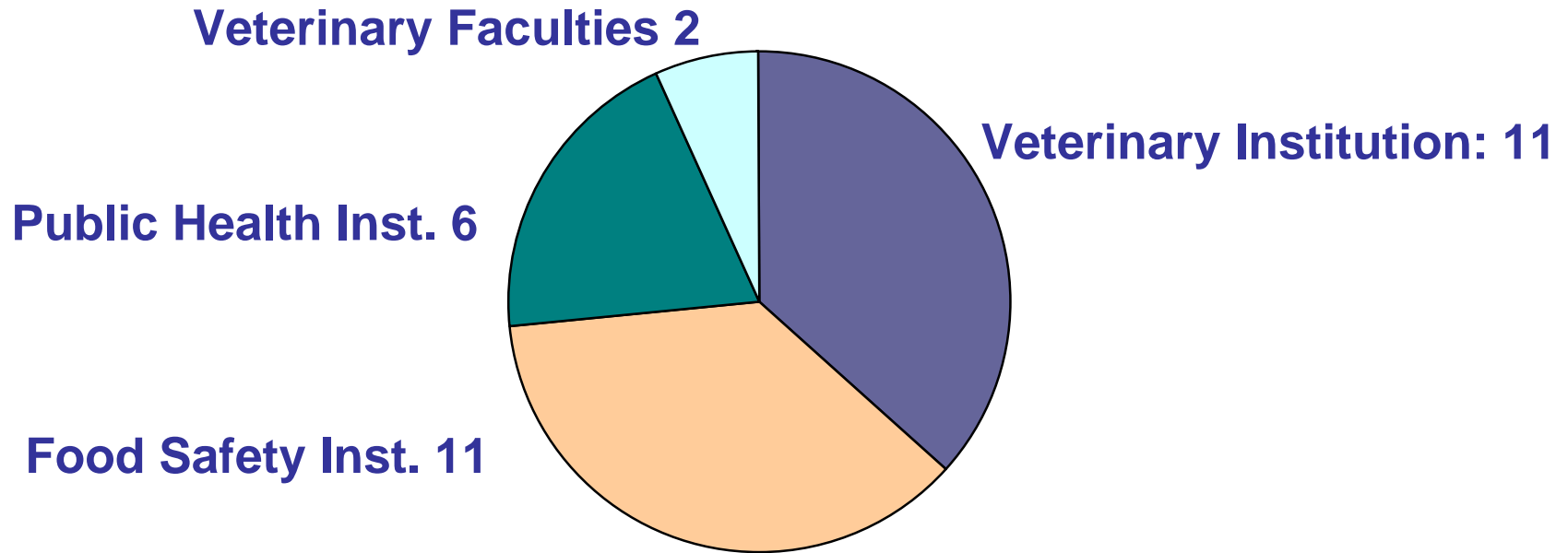
National Reference Laboratories (NRL) for *E.coli*



**22 EU countries +
Norway
Romania
have designated
30 NRLs**

Inventory of the European NRLs for *E.coli*

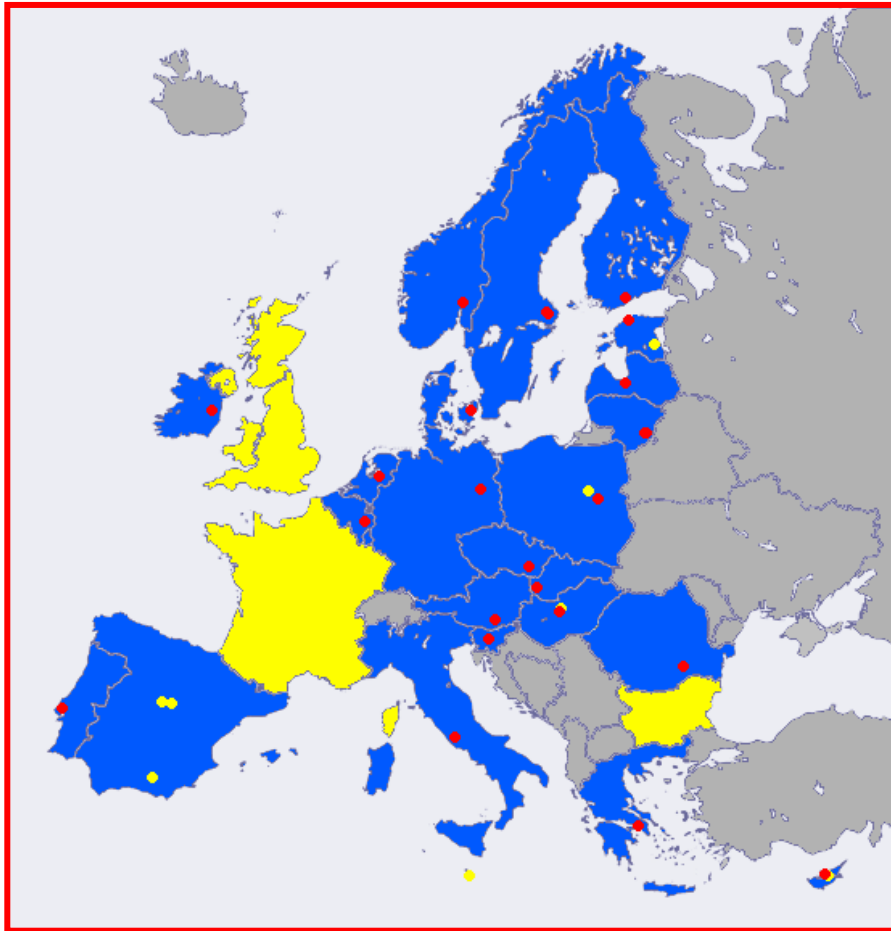
Legal status of the Institutions (NRLs)



7 Institutions are also the national representatives in Enter-net

Inventory of the European NRLs for *E.coli*

Questionnaires were received from **22 NRLs**

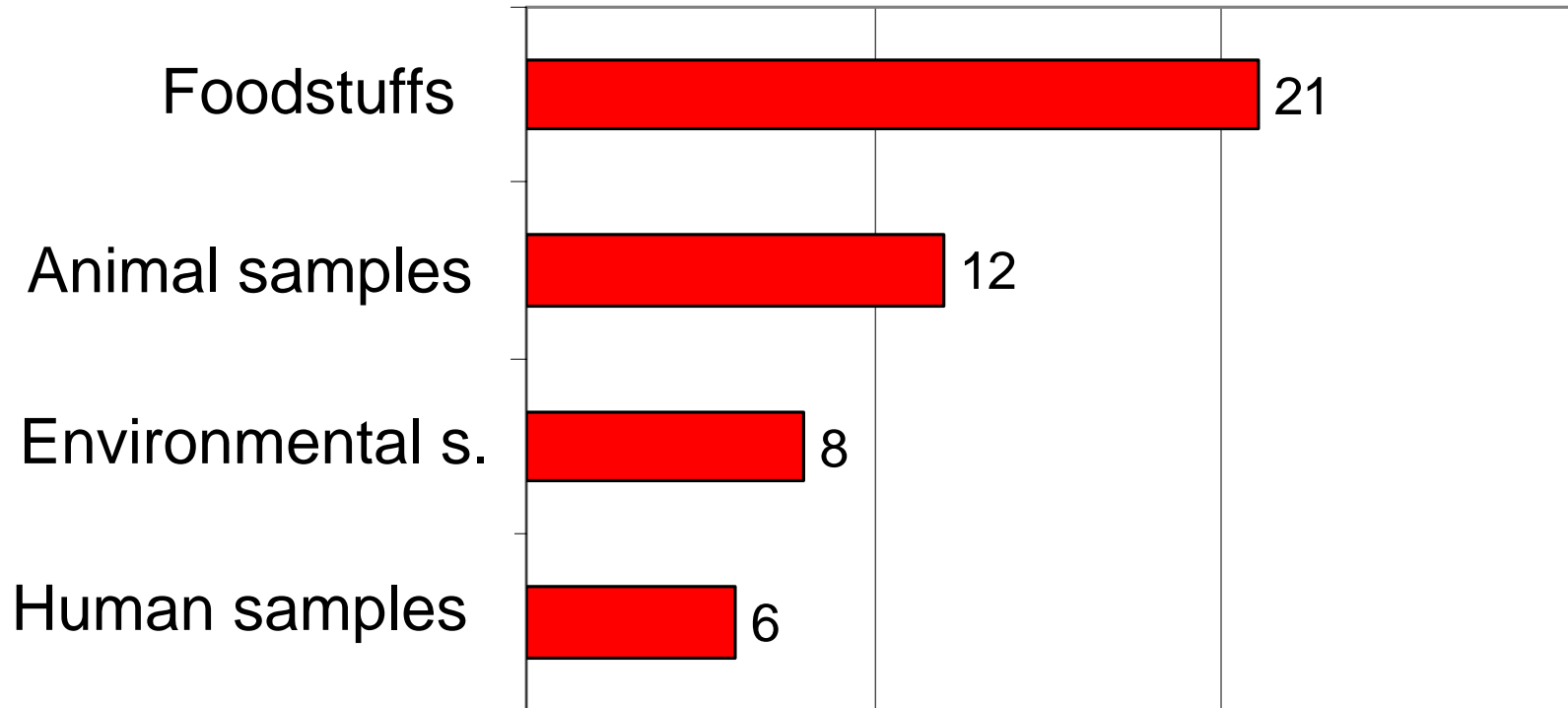


20 NRLs from **19** EU countries + Norway and Romania

Response Rate: 73%

Inventory of the European NRLs for *E.coli*

Analytical activities of the NRLs (22 Labs)



**Confirmation and Typing of VTEC strains isolated
by peripheral Labs: 10 Labs**

Inventory of the European NRLs for *E.coli*

Activity of the NRLs (22 labs)

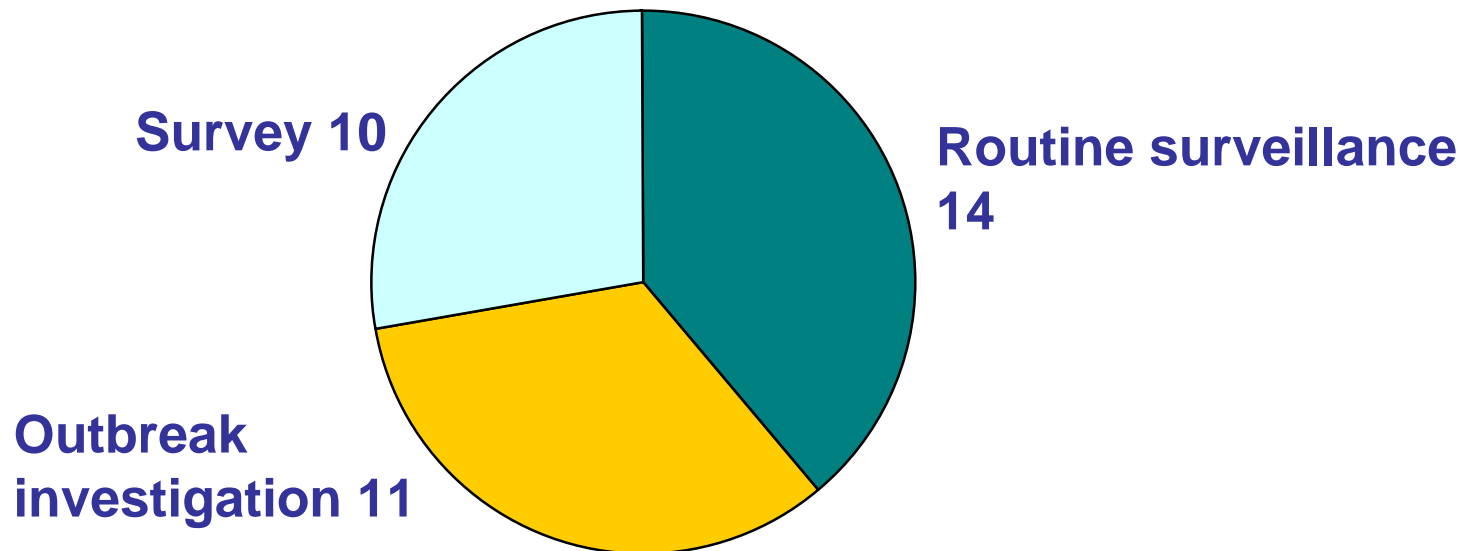
Approx. No. of samples examined per year

- **foodstuffs:** **5428** (median value: 75)
- **animal samples:** **4896** (median: 124)
- **human samples:** **4696** (median: 20)
- **environmental samples:** **1545** (median: 12)

- **Number of strains received for Confirmation and Typing:** **927** (median 30)

Inventory of the European NRLs for *E.coli*

Origin of the samples or the strains



Accreditation according to EN ISO/IEC 17025:2005

19 out of 22 NRLs (86%)

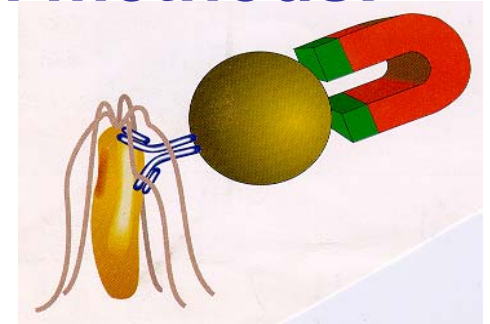
2 in progress

Inventory of the European NRLs for *E.coli*

VTEC in food

- Isolation by immuno-separation methods:

- *E.coli* O157: **17 Labs**
- VTEC non-O157: **3 Labs**



- Detection of markers indicating the presence:

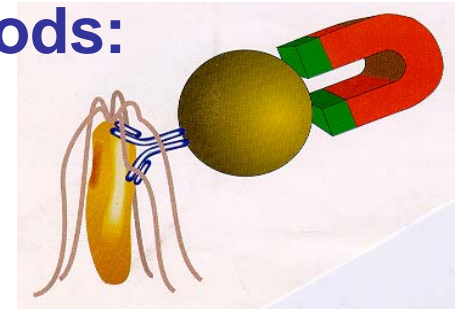
- *E.coli* O157:
 - Immunodetection procedures: **11**
 - PCR **10**
- VTEC non-O157:
 - PCR **10**
 - VT genes: **10**
 - eae gene: **7**



Inventory of the European NRLs for *E.coli*

VTEC in feces

- Isolation by immuno-separation methods:
 - *E.coli* O157: 8 Labs
 - VTEC non-O157: 3 Labs
- Detection of markers indicating the presence:
 - *E.coli* O157:
 - Immunodetection proc.: 2
 - PCR 9
 - VTEC non-O157:
 - PCR 9
 - VT genes: 9
 - eae gene: 7



Inventory of the European NRLs for *E.coli*

Identification of VTEC strains

- VT production: **7 Labs**
 - Vero cells: **3**
 - ELISA or Latex **5**
- VT genes: **13 Labs**
 - DNA probes: **3**
 - PCR: **13**
 - Immunodetection procedures: **2**
 - PCR **9**

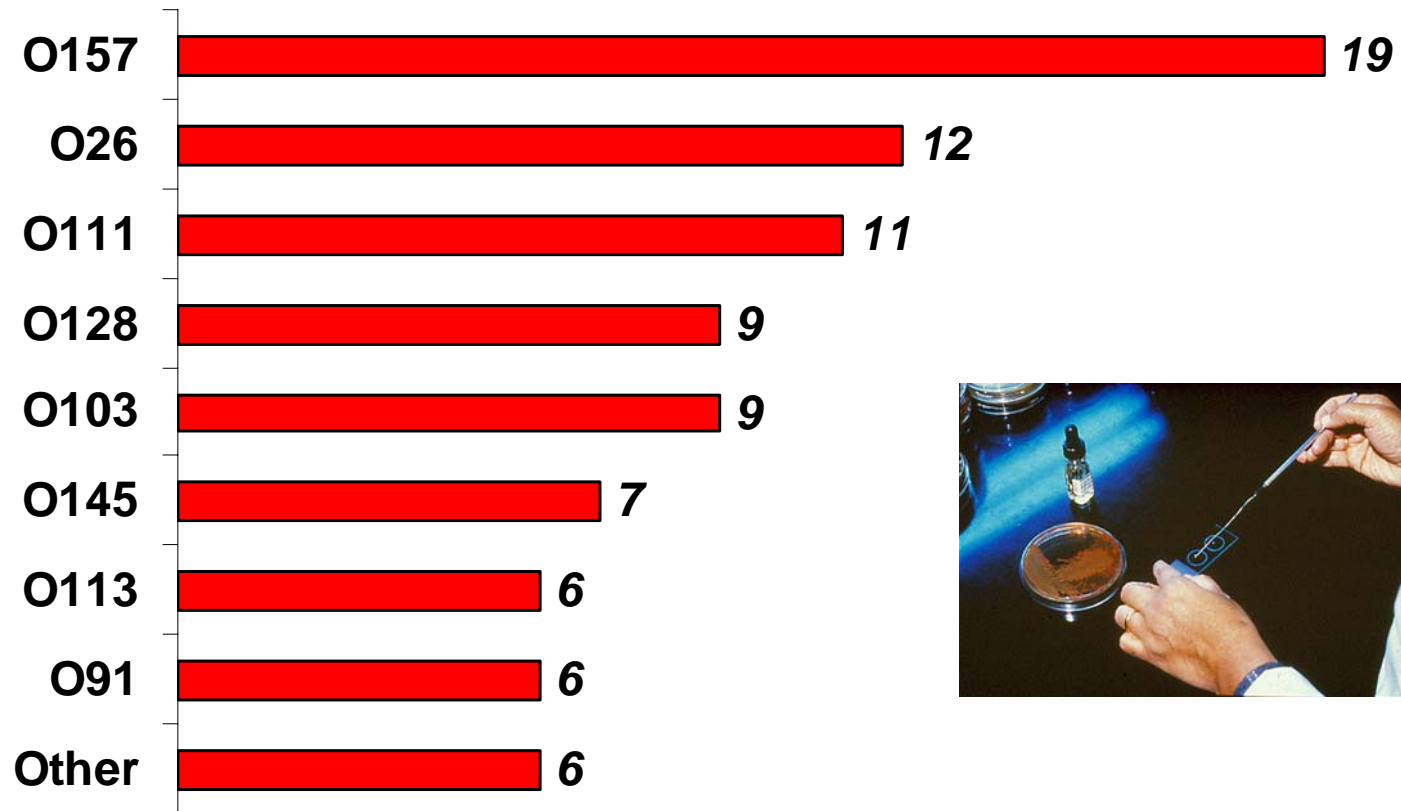


**Identification of VTEC strains by VT production
and/or detection of VT genes:**

16 Labs

Inventory of the European NRLs for *E.coli*

Serotyping of VTEC strains (O antigens) - Labs



Inventory of the European NRLs for *E.coli*

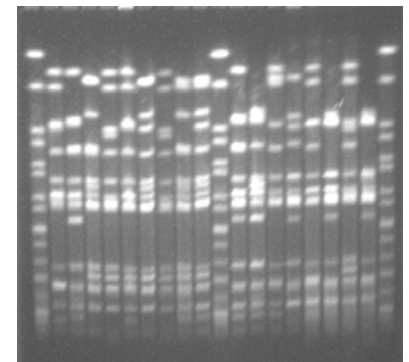
Serotyping of VTEC strains (H antigens)

- **H7:** 9 Labs
- **Other H:** 2
- **H-genotyping** 3



Phage-typing of VTEC O157 No Labs !

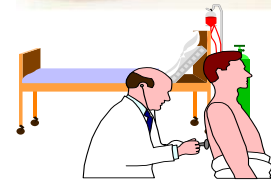
Molecular typing PFGE: 10 Labs



Inventory of the European NRLs for *E.coli*

Monitoring Activities of the NRLs

- **Foodstuffs: 15 labs**
 - All VTEC 10
 - O157 only 5
- **Human infections: 7 labs**
 - All VTEC 1
 - O157 only 6
- **Animals: 11 labs**
 - All VTEC 6
 - O157 only 5
- **Environment 8 labs**
 - All VTEC 5
 - O157 only 2



Inventory of the European NRLs for *E.coli*

Culture collections at NRLs

- **Foodstuffs:** **11 Labs**
 - O157: **856 strains**
 - Non O157: **516 strains**
- **Human infections:** **6 Labs**
 - O157: **918 strains**
 - Non O157: **926 strains**
- **Animals:** **10 Labs**
 - O157: **2608 strains**
 - Non O157 : **2011 strains**
- **Environment** **4 Labs**
 - O157: **32 strains**
 - Non O157 : **927 strains**



Inventory of the European NRLs for *E.coli*

VTEC strains DataBases

- Identification and typing of VTEC from non-human sources: **12 Labs**
- Approx. number of non human VTEC strains in 2005: **1200 Strains**
- All available to contribute to a European Database of VTEC strains from non-human sources:
- Most frequent available information on strains:
 - **Serogroup**
 - **VT type**

Summary

- **Most NRLs have been designated**
- **Most NRLs :**
 - are involved in food analyses
 - are accredited according to EN ISO/IEC 17025:2005
 - perform *E.coli* O157 isolation from food by standardized immuno-separation methods

Summary

- **18 / 22** NRLs are able to make presumptive identification of *E.coli* O157 by slide agglutination
- **17 / 22** NRLs are able to confirm the identification as VTEC by VT production or VT genes
- **14 / 22** NRLs can perform PCR analyses

Summary

- **Phagetyping of *E.coli* is not performed in the network**
- **PFGE is performed in at least 10 NRLs**
- **The NRLs isolate more than 1000 VTEC strains per year from non-human sources and the information on these isolates could be collected in a DataBase**

Grazie per l'attenzione

