National Institute for Public Health
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The 31st EURL-Salmonella workshop

12 and 13 May 2026,
Zaandam, the Netherlands

RIVM report 2026-0058
K.A. Mooijman

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Colophon

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K.A. Mooijman (author), RIVM

Contact:
K.A. Mooijman
Centre for Zoonoses and Environmental Microbiology (Z&O)
kirsten.mooijman@rivm.nl

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Synopsis

The 31st EURL-*Salmonella* workshop

12 and 13 May 2026, Zaandam, the Netherlands

The EU Reference Laboratory (EURL) for *Salmonella* organised the 31st workshop for the European National Reference Laboratories (NRLs) in May 2026. The aim of the workshop is to exchange information between the EURL and the NRLs. The workshop was held both live and online.

Like previous workshops, the EURL gave presentations about the proficiency tests it conducts each year to monitor the quality of the NRL laboratories. This report gives a brief summary of the organisation and results of those proficiency tests. The EURL will publish detailed results separately for each proficiency test.

The NRLs scored well in the three proficiency tests organised in 2025 and 2026. In two of those tests, the laboratories had to detect *Salmonella* in chicken faeces and in canned tomatoes. The third test involved identification of the *Salmonella* strains (typing).

Several NRLs gave presentations on activities and research performed in their laboratories. These included how NRLs fulfil their statutory duties and how they can improve methods for analysing *Salmonella*. Another topic covered was research on *Salmonella* in wild boar meat.

Other presentations focused on the use of whole genome sequencing for *Salmonella* typing and on how NRLs interpret the results generated using this method. The participants also discussed these topics in small groups during the break-out session.

EURL-*Salmonella* is part of RIVM, the National Institute for Public Health and the Environment, and organises this workshop each year. A key task of the EURL-*Salmonella* is to monitor the quality of the European NRLs' testing for this bacterium.

Keywords: EURL-*Salmonella*, NRL-*Salmonella*, *Salmonella*, workshop 2026, reference laboratory

Publiekssamenvatting

De 31e EURL-*Salmonella* workshop

12 and 13 May 2026, Zaandam, the Netherlands

In mei 2026 organiseerde het Europese Referentie Laboratorium (EURL) voor *Salmonella* voor de 31e keer de workshop voor de Europese Nationale Referentie Laboratoria (NRL's). Het doel is om informatie uit te wisselen tussen het EURL en de NRL's. De workshop was live en online te volgen.

Net als bij eerdere workshops gaf het EURL presentaties over de ringonderzoeken die elk jaar worden georganiseerd. Met deze ringonderzoeken controleert het EURL de kwaliteit van de NRL-laboratoria. In dit rapport staat kort beschreven hoe de ringonderzoeken worden uitgevoerd en wat de resultaten zijn. Uitgebreide informatie over de resultaten wordt apart per ringonderzoek gepubliceerd.

De NRL's scoorden goed in de drie ringonderzoeken die in 2025 en 2026 zijn georganiseerd. In twee daarvan moesten de laboratoria *Salmonella* terugvinden in kippenmest en in tomaten in blik. In het derde ringonderzoek moesten zij in kaart brengen om welke *Salmonella*bacteriën het gaat (typering).

Een aantal NRL's gaven een presentatie over activiteiten en onderzoek in hun laboratoria. Bijvoorbeeld hoe NRL's hun wettelijke taken invullen en hoe de methode om *Salmonella* te analyseren kan worden verbeterd. Een ander onderwerp was onderzoek naar *Salmonella* in vlees van wilde varkens.

Andere presentaties gaven informatie over het gebruik van whole genome sequencing om *Salmonella* te typeren en hoe NRL's de resultaten met deze methode interpreteren. Over deze onderwerpen is ook in kleine groepen tijdens de break-outsessie gediscussieerd.

Het EURL voor *Salmonella* is onderdeel van het RIVM en organiseert deze workshop elk jaar. Een belangrijke taak van het EURL-*Salmonella* is de kwaliteit controleren van de nationale referentielaboratoria voor deze bacterie in Europa.

Kernwoorden: EURL-*Salmonella*, NRL-*Salmonella*, *Salmonella*, workshop 2026, referentielaboratorium

Contents

Summary — 6

1 Introduction — 8

2 Tuesday 12 May 2026: Day 1 of the workshop — 9
2.1 Opening and introduction — 9
2.2 Reporting on *Salmonella* in animals and food in the European Union — 9
2.3 Amendment of Regulation (EU) 2017/625 in relation to laboratories — 12
2.4 Results EURL-*Salmonella* PT PPS 2025 – Detection of *Salmonella* in chicken faeces — 12
2.5 Preliminary results EURL-*Salmonella* PT Food 2026 – Detection of *Salmonella* in canned tomatoes — 14
2.6 Results EURL-*Salmonella* Proficiency Test Serotyping 2025 — 16
2.7 Ongoing increase in autochthonous *Salmonella* Enteritidis infections in the Netherlands — 17
2.8 *Salmonella* in wild boar meat in Sweden — 17
2.9 WGS-based geno-serotyping of LPS-deficient *Salmonella* and polyphyletic serovars and their impact on European *Salmonella* control programmes — 18
2.10 Break-out session — 20

3 Wednesday 13 May 2026: Day 2 of the workshop — 22
3.1 Inter-EURLs WG NGS Guidelines for the validation of Whole Genome Sequencing for accreditation & Experiences of the EURL-*Campylobacter* — 22
3.2 EURL Public Health Food- and Water-borne bacteria — 24
3.3 The critical role of pre-enrichment timing on *Salmonella* detection — 24
3.4 Activities NRL-*Salmonella* Kosovo — 25
3.5 Activities NRL-*Salmonella* Spain — 27
3.6 Do we need an international standard method for detection of *Salmonella* Gallinarum in poultry primary production? — 28
3.7 Activities EURL-*Salmonella* 2026-2027, Discussion on general items, Closure — 30

4 Evaluation of the workshop — 35
4.1 Introduction — 35
4.2 Evaluation results — 35

Acknowledgements — 47

References — 48

List of abbreviations — 51

Appendix 1 Participants — 52

Appendix 2 Programme of the 31st EURL-Salmonella workshop; 12 and 13 May 2026, Zaandam, the Netherlands; Hybrid meeting — 55

Appendix 3 Workshop evaluation forms — 57

Summary

On 12 and 13 May 2026, the European Union Reference Laboratory for *Salmonella* (EURL-*Salmonella*) organised its annual workshop. The workshop was held as a hybrid meeting in Zaandam, the Netherlands.

The workshop participants included representatives of the National Reference Laboratories for *Salmonella* (NRLs-*Salmonella*) from all 27 European Union (EU) Member States and from 9 third countries, including EU candidate and potential candidate countries and European Free Trade Association (EFTA) countries. Representatives of the European Commission Directorate-General for Health and Food Safety (DG SANTE) and the European Food Safety Authority (EFSA) also attended the workshop.

A total of 80 participants registered: 40 participated on site in Zaandam and 40 took part online.

The workshop included presentations on the following topics:

- The EFSA representative gave a presentation on *Salmonella* reporting in animals and food in the European Union.
- The representative of DG SANTE gave a presentation on the development of an amendment to Regulation (EU) 2017/625 (EC, 2017).
- Representatives of EURL-*Salmonella* presented the results of the proficiency tests (PTs) organised in 2025 and 2026: the PT on detection of *Salmonella* in chicken faeces (June/July 2025), the PT on *Salmonella* typing (August–October 2025) and the PT on detection of *Salmonella* in canned tomatoes (April/May 2026).
- A representative of the Dutch National Institute for Public Health and the Environment (RIVM) presented the ongoing increase in autochthonous *Salmonella* Enteritidis infections in the Netherlands.
- Another RIVM representative gave a presentation on the establishment of the new EU Reference Laboratory for Public Health on food- and water-borne bacteria.
- Representatives of the NRLs-*Salmonella* in Kosovo and Spain described how they fulfil their statutory tasks and duties. Other NRL representatives presented research on the detection of *Salmonella* in wild boar meat (Sweden) and on improving the method for detection of *Salmonella* (France).
- Two presentations covered ongoing ISO and CEN activities related to the standardisation of methods for *Salmonella* analysis: one presented by a representative of the Dutch animal health service, Royal GD, on *Salmonella* Gallinarum in poultry and one presented by an EURL-*Salmonella* representative on zoonotic *Salmonella.*
- Representatives of EURL-*Campylobacter* presented the inter-EURLs working group NGS guidelines for validation of WGS and described their experiences of using them.
- A representative of the NRL-*Salmonella* from Germany gave a presentation on WGS-based geno-serotyping.

The latter presentation also served as an introduction to the break-out session. During this session, three groups discussed about alternative methods for *Salmonella* serotyping and interpretation of the results obtained using these methods.

The workshop concluded with a presentation on the EURL-*Salmonella* work programme for 2026-2027.

The workshop presentations are available on the EURL-*Salmonella* website: https://www.eurlsalmonella.eu/en/workshop-2026

1 Introduction

This report contains the abstracts of the presentations given at the 2026 EURL-*Salmonella* workshop, as well as summaries of the discussions that followed these presentations. The full presentations are available on the EURL-*Salmonella* website (provided the author has given permission for publication): https://www.eurlsalmonella.eu/en/workshop-2026

The structure of the report follows the workshop programme.

Chapters 2 and 3 include the abstracts of the presentations given on the first and second day of the workshop, respectively.

Chapter 4 presents the workshop evaluation; the evaluation form template is provided in Appendix 3.

Appendix 1 contains the list of participants.

Appendix 2 contains the workshop programme.

2 Tuesday 12 May 2026: Day 1 of the workshop

2.1 Opening and introduction

*Kirsten Mooijman, head of EURL-*Salmonella*, Bilthoven, the Netherlands*

Kirsten Mooijman, head of the European Union Reference Laboratory for *Salmonella* (EURL-*Salmonella*), opened the 31st EURL-*Salmonella* workshop and welcomed all participants to the hybrid event.

A total of 80 participants had registered for the workshop. They included representatives of the National Reference Laboratories for *Salmonella* (NRLs-*Salmonella*) from all 27 EU Member States (MSs), and 9 third countries, including EU candidate and potential candidate countries and member countries of the European Free Trade Association (EFTA). Representatives of the European Commission Directorate-General for Health and Food Safety (DG SANTE) and of the European Food Safety Authority (EFSA) also attended. Of the 80 registered participants, 40 participated on site in Zaandam and 40 online.

The evaluation of the workshops organised in 2019-2025 was presented, showing high (positive) scores for all questions raised.

The workshop started after the programme and general information had been presented. The workshop programme can be found in Appendix 2.

2.2 Reporting on *Salmonella* in animals and food in the European Union

Frank Boelaert, EFSA, Parma, Italy

The EU One Health 2024 zoonoses report was drafted by the European Food Safety Authority (EFSA) and the European Centre for Disease Prevention and Control (ECDC) (EFSA and ECDC, 2025). This report presents the results of zoonoses monitoring and surveillance activities carried out in 2024 in 27 Member States (MSs), the United Kingdom (Northern Ireland) and eight non-MSs, according to the Zoonoses Directive 2003/99/EC (EC, 2003).

In 2024, 27 European Union MS and the United Kingdom (Northern Ireland) reported 6 558 foodborne outbreaks, 62 481 human cases, 3 336 hospitalisations and 53 deaths. This was 12 fewer deaths than in 2023. Eight non-MSs reported 102 foodborne outbreaks, 1 583 cases of illness, 185 hospitalisations and two deaths. *Salmonella* was identified in most foodborne outbreaks with known causative agents (N = 1 238) and was associated with the highest number of hospitalisations (N = 1 823) and deaths (N = 17, the same as for *Listeria monocytogenes*). *Salmonella* Enteritidis was the most frequently reported *Salmonella* serovar, accounting for 512 foodborne outbreaks and 74,1% of the *Salmonella* outbreaks for which serovar information was available. *Salmonella* was also the most frequently reported causative agent in multi-country foodborne outbreaks in 2024.

Compliance checks against the food safety criteria in Commission Regulation (EC) No 2073/2005 (EC, 2005), showed that the prevalence of *Salmonella*-positive samples at the manufacturing stage (4,9%) was twice as high as that at the distribution stage (2,3%). The highest levels of contamination were found in 'meat products made from poultry meat intended to be eaten cooked' (13,2% at manufacturing and 5,0% at distribution), 'mechanically separated meat (MSM)' (12,8% at manufacturing and 3,6% at distribution), 'minced meat and meat preparations made from poultry meat intended to be eaten cooked' (9,9% at manufacturing and 5,8% at distribution) and 'fresh poultry meat' (7,7% at distribution and 6,3% at manufacturing).
Member States reported the highest proportions of *Salmonella*-positive samples during compliance checks against process hygiene criteria for carcases at slaughterhouses among those collected by the competent authorities for broilers (18,7%), turkeys (17,4%) and pigs (3,8%). Lower prevalence was observed in official samples from cattle (1,5%) and sheep (1,2%).
For samples collected by food business operators, the proportions of *Salmonella*-positive samples were significantly lower: 4,9% for broilers, 3,5% for turkeys, 0,95% for pigs, 0,39% for sheep and 0,29% for cattle. For horses and goats, the prevalence rates were very low (< 1%) for both official and own-check controls.

In 2024, a very low proportion (0,23%) of *Salmonella*-positives was found in 'ready-to-eat' food sampling units (N = 102 696) reported by 24 MS). The highest levels of contamination were found in 'meat and meat products from turkeys' (3,2%), 'sprouts (sprouted seeds)' (2,9%) and 'meat and meat products from broilers' (1,3%). Of the 520 720 'non-ready-to-eat' sampling units reported by 27 MSs and the United Kingdom (Northern Ireland), 2,3% were *Salmonella*-positive. The highest levels of contamination were found in 'meat and meat products from broilers' (5,1%), 'meat and meat products from turkeys' (4,7%), 'other meat and meat products' (2,5%), 'meat and meat products from pigs' (1,9%) and 'mixed meat products' (1,1%).

Fourteen reporting MSs and the United Kingdom (Northern Ireland) met all *Salmonella* reduction targets for poultry populations in their control programmes, compared with 15 MSs in 2023 and 19 in 2022. In 2024, four MSs failed to meet the targets for breeding *Gallus gallus*, six for laying hens, one for broiler flocks and two for breeding and fattening turkeys.

For broilers and fattening turkeys, the European Union-level prevalence of target *Salmonella* serovar-positive flocks reported by food business operators was significantly lower than that reported by competent authorities.

Over the last 10 years (2015-2024), a significant increase in the EU-level prevalence of *Salmonella* and target *Salmonella* serovar-positive flocks was observed in breeding *Gallus gallus* and breeding turkeys. For breeding turkeys, this significant upward trend was also confirmed for the most recent period (2020-2024). For the other poultry populations covered by the national control programmes, no significant trends (neither increasing nor decreasing) were detected.

Among the 20 most frequently reported *Salmonella* serovars by food-animal source, *Salmonella* Enteritidis was the most frequently reported serovar in the laying hens-eggs source and the second most frequently reported in broilers-broiler meat. *Salmonella* Infantis was by far the dominant serovar in broilers-broiler meat. In pigs-pig meat, monophasic *Salmonella* Typhimurium and *Salmonella* Derby were the most common serovars, followed by *Salmonella* Typhimurium. In 'bovine animals-bovine meat', *Salmonella* Typhimurium was the most common serovar, followed by *Salmonella* Dublin.

Alongside the report, EFSA also published several interactive communication tools: a *Salmonella* story map (available here), a *Salmonella* dashboard (available here), a foodborne *Salmonella* outbreaks story map (available here) and a foodborne outbreaks dashboard (available here).

Discussion

Q: During the COVID-19 pandemic, the number of infections fell due to restaurant closures and a reduction in the number of samples analysed. The number of *Salmonella* infections still appears to be below pre-2020 (pre-pandemic) levels. Is that correct?

A: Indeed, the COVID-19 pandemic disruptions affected the disease reporting. On the other hand, the post-pandemic surveillance improved. In 2024, for the first time since 2020, the number of human salmonellosis cases slightly exceeded those reported in 2019, the last year before a decline in cases reported during the pandemic. This suggests that case numbers at EU level are returning to pre-pandemic levels. The number of infections showed a statistically significant increase over the last 5 years. This apparent upward trend is likely to be an artefact of the pandemic's effect on surveillance data since 2020 rather than evidence of a genuine increase in case numbers.

Q: Why does *Salmonella* appear to be out of control in turkeys, with prevalence increasing? Are control measures different for this species, or is there a host related efficacy of the bacterium?

A: The observed trend does not mean that *Salmonella* is out of control in turkeys. Changes in population size, reporting, analytical methods and training in Member States may have improved detection, resulting in an apparent rather than a genuine increase in flock prevalence. In addition, the increase was observed only in breeding turkeys, not in fattening turkeys. Breeding turkey flocks are present in only 13 MS, so an increase in flock prevalence in a single country may have a substantial effect on the overall EU figures. The target is also sensitive because flocks are sampled frequently; for example, adult flocks are sampled at the holding or hatchery at least every third week during the laying period. Finally, breeding flocks are located far upstream from consumers, and control at primary production remains important for limiting transmission through the production chain.

2.3 Amendment of Regulation (EU) 2017/625 in relation to laboratories

Kris De Smet, EC DG SANTE, Brussels, Belgium

In December 2025, the European Commission adopted a proposal to the European Parliament and the Council for a so called 'Simplification Omnibus for Food and Feed Safety Requirements'. Within the Omnibus, two (simplification) proposals are made as regards the accreditation of official laboratories and European and National reference laboratories:

- Possible accreditation to other standards than EN ISO/IEC 17025 under certain conditions, to be laid down in a Commission Delegated Regulation. For example, the Commission could permit accreditation in accordance with EN ISO 15189 (for medical laboratories) in case of further testing (such as WGS or AMR testing), of biological food safety hazards isolated from food samples.
- No accreditation needed for all methods used in European or National Reference laboratories when derogated in a Commission Delegated Regulation. Initial needs have been identified in the areas of plant health, food contact materials, food and feed additives, food enzymes and flavourings.

The Simplification Omnibus is currently discussed in the European Parliament and the Council. Adoption and publication are expected in the third quarter of 2026. From then on, the Commission can propose delegated Regulations to allow the above simplification/flexibility.

Discussion
Q: WGS analyses of human isolates is not part of Regulation 2025/179 (EC, 2025) and for these isolates no accreditation is prescribed. However, during outbreaks, we have to compare WGS of strains isolated from humans with WGS of strains isolated from animals or food. As the WGS of the isolates from these different working fields are obtained according to different requirements, we may have some quality issues. How should we manage this situation?
A: There is indeed no Regulation requiring accreditation for WGS analyses of human isolates. Nevertheless, typing and WGS analyses of human isolates are covered by the quality system under EN ISO 15189. Binding rules apply to food safety and animal production to ensure fair trade in the EU. For public health, however, following best practices and obtaining accreditation under EN ISO 15189 are recommended but not required by law.

2.4 Results EURL-*Salmonella* PT PPS 2025 – Detection of *Salmonella* in chicken faeces

*Robin Diddens, EURL-*Salmonella*, Bilthoven, the Netherlands*

In June/July 2025, the EURL-*Salmonella* organised a proficiency test (PT) for NRLs-*Salmonella* on the detection of *Salmonella* in samples from the primary production stage. The matrix under analysis was chicken faeces.

NRLs-*Salmonella* that analyse *Salmonella* in samples from the primary production stage were invited to participate in this PT. A total of 35 NRLs-*Salmonella* participated in the EURL-*Salmonella* PT. These comprised NRLs-*Salmonella* from all 27 EU MSs and eight third countries, including EU candidate countries, EFTA countries, the United Kingdom and one non-European country.

The main objective of the PT was to assess the participating laboratories' performance for detecting *Salmonella* in the artificially contaminated chicken faeces samples. The prescribed method for detecting *Salmonella* spp. was EN ISO 6579-1:2017/A1:2020. Participants were asked to report each sample as *Salmonella* 'detected' or 'not detected' following confirmation.

Prior to the start of the PT, pre-tests were conducted to ensure that the samples were fit for use. For this, chicken faeces samples were artificially contaminated with different low concentrations of *Salmonella* Typhimurium (STm), and their stability was tested at two different storage temperatures (5 °C and 10 °C) for a total of two weeks. Additionally, the concentration of the natural background flora (aerobic count and number of *Enterobacteriaceae*) in the chicken faeces was measured.

The number of aerobic bacteria and *Enterobacteriaceae* in the chicken faeces samples remained stable when stored at 5 °C. The number of aerobic bacteria in the samples was approximately 10^{10} cfu/25 g chicken faeces and the number of *Enterobacteriaceae* was approximately 10^{8} cfu/25 g chicken faeces during 12 days of storage.

Based on the pre-test results and previous EURL-*Salmonella* PTs using chicken faeces as a matrix, the target inoculum levels for the PT samples were approximately 20 cfu STm/25 g for the low-level samples and approximately 100 cfu STm/25 g for the high-level samples.

On Monday 2 June 2025, EURL-*Salmonella* sent the PT samples to all participants. Each laboratory received 14 samples containing 25 g of chicken faeces: four negative samples with no *Salmonella* added, six low-level samples with an inoculum of 21 cfu STm/25 g and four high-level samples with an inoculum of 79 cfu STm/25 g. The PT samples had been artificially contaminated with a diluted culture of *Salmonella* Typhimurium in the EURL-*Salmonella* laboratory. NRLs-*Salmonella* could begin analysing the samples immediately after receipt of the parcel, or over the following days. The latest permitted start date was Tuesday 10 June 2025.

Thirty-four NRLs-*Salmonella* met the criteria for good performance in this PT. One NRL-*Salmonella* (laboratory 33) scored a moderate performance, because of an administrative error.

The specificity rate of the negative chicken faeces samples was 100%. Based on the results from all laboratories, the sensitivity rate of the chicken faeces samples artificially contaminated with *Salmonella* Typhimurium was 95%. The accuracy rate of all chicken faeces samples for all participating laboratories was 97%.

Further details are provided in the report on this PT (Diddens and Mooijman, 2026a).

Discussion
Q: What is the definition of moderate performance in a PT?
A: Moderate performance is used when results of an NRL deviate because of one or more administrative errors. When an NRL reports deviating results, EURL-*Salmonella* asks the laboratory for a technical explanation. For example, if the raw data show that the deviation was caused by swapping of sample results on the reporting form, the performance is classified as moderate. It cannot be classified as good performance because results must also be reported correctly. However, it is not classified as unsatisfactory performance either, because a follow-up study is normally organised in response to unsatisfactory performance. However, a follow-up study is intended to investigate problems or errors in sample analysis, not administrative errors in PT reporting.

Q: What should I do if a participant in our national PT performs poorly after many years of good performance? Should I still organise a follow-up study for this laboratory?
A: For EURL-*Salmonella* PTs, we always ask a laboratory with unsatisfactory performance to explain the deviating results. If a clear technical problem explains the deviation, we assess whether a follow-up study is necessary. For accreditation purposes, however, the laboratory must demonstrate that its performance has returned to the required level once the problem has been resolved. A follow-up study can help to demonstrate this.

2.5 Preliminary results EURL-*Salmonella* PT Food 2026 – Detection of *Salmonella* in canned tomatoes

Robin Diddens, EURL-Salmonella*, Bilthoven, the Netherlands*

In April/May 2026, the EURL-*Salmonella* organised a proficiency test (PT) for NRLs-*Salmonella* on the detection of *Salmonella* in food samples.

Preliminary tests comparing snack tomatoes and canned tomatoes were conducted to select the matrix. To determine whether the matrices without *Salmonella* would remain suitable for use, both were stored at 5 °C and 10 °C for 2-3 weeks. The background flora was examined, and the samples were checked for visible mould growth. Snack tomatoes showed visible mould growth after two weeks of storage. Canned tomatoes showed no visible mould growth even after three weeks of storage, and both the *Enterobacteriaceae* concentration and the aerobic count remained below 10 cfu/g. Canned tomatoes were therefore selected as the matrix for this PT.

NRLs-*Salmonella* were advised to use the method which they (routinely) apply for official control analyses. This could be EN ISO 6579-1:2017/ A1:2020 or a validated alternative analytical method (for example PCR, real-time PCR, Vidas). The results obtained using this method were used to assess the performance of each NRL-*Salmonella*.

Pre-tests were conducted to ensure that the canned tomato samples were fit for use. The samples were artificially contaminated with different low concentrations of *Salmonella* Virchow (SV) and a high concentration of *Enterobacter cloacae*. Additional samples contained only *Enterobacter cloacae* or *Citrobacter koseri*. The stability of the samples was tested at two different storage temperatures, 5 °C and 10 °C, for a total of three weeks. The results showed that *Salmonella* could be detected after up to 2 weeks of storage at 5 °C. The concentrations of *Enterobacter cloacae* and *Citrobacter koseri* decreased by approximately 2-3 $\log_{10}$ units over two weeks.

Based on the pre-test results, the target inoculum levels for the PT samples were approximately 25 cfu SV/25 g for the low-level canned tomato samples and approximately 120 cfu SV/25 g for the high-level samples. All samples, except one negative sample, were artificially contaminated with approximately 10^8 cfu/25 g of *Enterobacter cloacae*. In each sample set, sample A12 was artificially contaminated with approximately 10^8 cfu/25 g of *Citrobacter koseri* instead of *Enterobacter cloacae*.

The samples were initially scheduled for shipment on Monday 16 March 2026, but due to leakage of the sample bags the shipment had to be cancelled. New samples were prepared, and the bags were sealed with temporary clips to prevent further leakage. On Tuesday 7 April 2026, EURL-*Salmonella* sent the replacement PT samples to all participants. The latest permitted start date for the analysis was Tuesday 13 April 2026, and the deadline for reporting the results was 6 May 2026.

Shortly before the workshop, participants received the intended results for the PT. The interim summary report containing the results from all participants was sent to them after the workshop in June 2026 (Diddens and Mooijman, 2026b).

Discussion
Q: You mentioned the presence of moulds on fresh tomatoes. Could this affect the sensitivity of *Salmonella* detection in fresh tomatoes in routine samples?
A: For PTs, samples are treated differently. During the pre-tests, portions of cut tomatoes were stored for one or two weeks at 5 °C or 10 °C. Mould became visible after storage, which is why we did not use fresh tomatoes in this PT. We did not want to distribute samples that might be contaminated with moulds. In routine analyses, mould is unlikely to be a problem because samples are analysed shortly after arriving at the laboratory. However, PT samples must remain stable for approximately 2-3 weeks to allow time for sample preparation, transport to the laboratories and, where necessary, short-term storage at the participant's laboratory before analysis.

Remark from an NRL: Chicken faeces can also show visible mould growth after storage at 5 °C for 2-3 weeks. We encountered this problem when preparing samples for a national PT. We therefore store chicken faeces intended for PTs at −20 °C, although we do not normally do this for routine samples.

2.6 Results EURL-*Salmonella* Proficiency Test Serotyping 2025

Wilma Jacobs-Reitsma, EURL-Salmonella*, Bilthoven, the Netherlands*

In August-October 2025, EURL-*Salmonella* organised its annual proficiency test (PT) on *Salmonella* serotyping. The main objective was to assess the performance of the NRLs for serotyping of *Salmonella*. This year's PT did not include an optional part on cluster analyses.
A total of 33 laboratories participated in the PT. Participation was mandatory for the NRLs-*Salmonella* from all 27 EU MSs. Six additional NRLs participated voluntarily: two from EU candidate countries, three from EFTA countries and one from a third country.

The EURL-*Salmonella* selected a total of 20 mandatory *Salmonella* strains and one less common optional strain for serotyping. The strains had to be typed according to the method routinely used in each laboratory, following the White-Kauffmann-Le Minor scheme (Grimont and Weill, 2007).

Overall, 97,5% of the strains were typed correctly for the O antigens, 98,8% of the strains were typed correctly for the H-antigens, and 96,9% of the strains were correctly named by the participants.

The criteria for good performance of serotyping were defined in 2007. Based on these criteria, the participants performed very well, including the six participants that submitted partial or additional whole genome sequencing (WGS)-based serotyping results.
All 27 EU NRLs and five non-EU NRLs met the criteria for good performance during the first stage of the PT. One non-EU NRL-*Salmonella* with a limited scope for *Salmonella* serotyping met the criteria after receiving on-site practical training.

Further details are provided in the interim summary report of this PT (Jacobs-Reitsma et al., 2025).

Discussion
Q: What is the correct procedure for the *d*-tartrate test? Should we use the procedure described in CEN ISO/TR 6579-3?
A: The *d*-tartrate test described in CEN ISO/TR 6579-3 is not mandatory. The White-Kauffmann-Le Minor scheme (Grimont and Weill, 2007) indicates that a *d*-tartrate test is needed to distinguish between *Salmonella* Paratyphi B and *Salmonella* Paratyphi B var. Java, but it does not specify which test to use. CEN ISO/TR 6579-3 describes a biochemical test that uses lead acetate, which is now recognised as highly toxic and is a suspected carcinogen. We are therefore examining alternative biochemical *d*-tartrate tests. Alternatively, a molecular method such as PCR or WGS can be used to distinguish between the two variants.

Q: Are there any ready-to-use kits for the *d*-tartrate test?
A: Not as far as we know.

2.7 Ongoing increase in autochthonous *Salmonella* Enteritidis infections in the Netherlands

Roan Pijnacker, RIVM, Bilthoven, the Netherlands

Since June 2023, the Netherlands has experienced a substantial increase in the number of autochthonous *Salmonella* Enteritidis (SE) cases. SE infections are often linked to the consumption of eggs and other poultry products. This rise has been accompanied by an increase in SE-positive laying-hen flocks. Following a major SE outbreak in 2023, whole genome sequencing has revealed that most human cases in 2024 and 2025 occurred in smaller clusters. This pattern suggests diffuse transmission rather than a single point-source outbreak, complicating outbreak investigations and highlighting the need for coordinated, cross-sectoral control strategies.

Discussion

Q: You indicated that farm-specific *Salmonella* Enteritidis strains may be present. Have the farms and their surroundings been tested? In other words, could they act as reservoirs for specific *Salmonella* Enteritidis strains?
A: We wondered the same, and additional studies are therefore under way to test farm environments. Samples are being taken from dust, mice and beetles. We are investigating the sources of infection on farms and how flocks become reinfected with the same strain.

Q: Are SE infections associated with specific flock types, such as free-range flocks? Has the soil been tested?
A: The infection was found in different flock types, and flock type did not appear to be a risk factor. Neither the wider environment nor the soil has yet been tested.

Q: Were the eggshell inactivation conditions inadequate, and could this have contributed to the outbreak?
A: We do not know the details, but the treatment appears to have been insufficient. We were also informed that the procedure for disinfecting eggshells is not yet clearly regulated by law.

Q: What caused the large peak in human *Salmonella* Thompson cases in 2012?
A: The peak was caused by a large outbreak linked to a salmon-processing facility. Biofilms had formed in cracks in the plates used to transport the salmon through the facility.

2.8 *Salmonella* in wild boar meat in Sweden

Madeleine Moazzami, NRL-Salmonella*, Uppsala, Sweden*

Sweden’s wild boar population has increased in recent years. Consequently, in 2020 the Swedish Government decided to increase wild boar hunting. This would make wild boar products more widely available to consumers, including vulnerable groups such as children in preschools and people receiving healthcare.
Salmonella is a zoonotic bacterium that can cause disease in humans through the consumption of wild boar meat and wild boar products. This

study aimed to determine the occurrence of *Salmonella*, other microbial hazards and hygiene indicators in Swedish wild boar meat.

A total of 144 samples of frozen minced wild boar meat were collected from game-handling facilities and local stores. The samples were thawed and tested for *Salmonella* by PCR screening using the IQ-check *Salmonella* II kit and by culture in accordance with EN ISO 6579-1:2017. *Salmonella* isolates underwent whole genome sequencing using Illumina technology. Core genome multilocus sequence typing was performed using the online EnteroBase platform. In addition, single nucleotide polymorphism analysis was used to compare closely related isolates.

Salmonella was detected in 6,2% (9/144) of the samples. All *Salmonella*-positive isolates originated from the same game-handling facility, but each came from a different batch. Six of the nine isolates were of serotype *Salmonella* Choleraesuis ST145. Four belonged to the same cluster, two of which were indistinguishable. All six isolates belonged to a known Swedish wild boar lineage. The other three isolates were *Salmonella* Newport ST166. All three clustered together, and two were indistinguishable. They also clustered closely with *Salmonella* previously detected in Swedish wild boar. It was noticed that the occurrence of *Salmonella* was also associated with the number of *Escherichia coli* in the meat. *Salmonella* was not detected in samples with less than 500 cfu *E. coli*/g.

This study showed that *Salmonella* is present in wild boar meat in Sweden, which poses a threat to public health. The recent national re-emergence of *Salmonella* Choleraesuis, which can cause systemic infection in vulnerable people, has probably increased the risk associated with *Salmonella* in Swedish wild boar products. There is a need for training hunters, for example in the hygienic removal of the gastrointestinal tract, to prevent contamination of the meat. Additionally, cleaning and disinfection at game-handling facilities should be improved to prevent cross-contamination of the meat.

Discussion
Q: Did you check if there were human cases with the same *Salmonella* serovars as those found in wild boar meat?
A: This has not yet been investigated because another authority is responsible for the comparison. It still need to be checked if there have been Swedish human cases with the same *Salmonella* serovars.

2.9 WGS-based geno-serotyping of LPS-deficient *Salmonella* and polyphyletic serovars and their impact on European *Salmonella* control programmes

Jennie Fischer, NRL-Salmonella*, Berlin, Germany*

With whole-genome sequencing (WGS), laboratories undergo a methodological shift from classical typing techniques to WGS-based approaches. WGS enables comprehensive analysis and provides high discriminatory power for bacterial characterisation, supporting a wide range of applications in routine diagnostics and fundamental research. It

also provides new insights into *Salmonella*'s natural genomic population structures. At the NRL-*Salmonella* in Germany, WGS is now used routinely as the gold standard approach for *Salmonella* characterisation. However, classical slide agglutination for serotyping is still performed as the basis of routine diagnostic work and sometimes shows discrepancies to WGS-based geno-serotyping, also affecting serovars covered by EU *Salmonella* control programmes. These discrepancies create uncertainty for risk managers and lead to non-harmonised risk-management decisions. For example, WGS-based prediction of the geno-serovar of phenotypically lipopolysaccharide (LPS)-rough *Salmonella* may identify a serovar subject to control measures, but based on phenotype this strain would not be subject to those measures. In addition, the identification of polyphyletic, controllable serovar lineages could also lead to discrepancies in decision-making, depending on the typing method used. This can occur even when only WGS-based methods are used.
In response to requests from German risk managers for guidance on these challenges, NRL-*Salmonella* in Germany started in-depth WGS-based analyses of LPS-rough *Salmonella* and polyphyletic *Salmonella* Enteritidis lineages. These analyses aim to improve understanding of their genetic biology, and to enable a better assessment of their relevance to human health, thereby supporting risk managers in making decisions.

We observed the LPS-rough phenotype in, on average, 5% of isolates across 46 serovars, but did not detect a clonal distribution of this phenotype along the food chain. Instead, it appeared to emerge randomly and spontaneously across diverse matrices. We therefore hypothesise that the occurrence of a mixed population of rough and smooth *Salmonella* on a farm is more likely than contamination of a farm by an exclusively rough *Salmonella* population.

Compared with other matrices, LPS-rough isolates were more common among *Salmonella* Choleraesuis isolates from wild boar and *Salmonella* Typhimurium isolates from pork products. We also explored associations with two virulence factors, an antimicrobial resistance (AMR) gene and a plasmid marker. For polyphyletic *Salmonella* Enteritidis lineages, we have begun screening the EnteroBase database to better understand the genetic diversity within the 9,12:g:- phenotype. These analyses may improve recommendations for risk management and control measures during the methodological transition from slide agglutination to WGS-based geno-serotyping and may inform EU control programmes.

Discussion
Q: Have you observed any rough strains that phenotypically reverted to smooth?
A: We searched for such strains in our database but have not yet found any.

Q: Were the strains isolated from different media, like MSRV agar or RVS broth?
A: The isolates were sent to us by other laboratories for further typing. We do not have details of the media from which they were isolated.

Q: Are all rough strains lipopolysaccharide (LPS)-deficient, or can other mechanisms also result in a rough phenotype?
A: We are investigating this using the 'Roughy tool'. It appears that strains may be rough for different reasons.

2.10 Break-out session

During the break-out session, the on-site participants were divided into three groups to discuss the use of alternative methods for *Salmonella* serotyping and the interpretation of results obtained using these methods.
Participants received a list of proposed discussion points as an introduction to the session. A summary of the outcome of the discussions is given below.

Do you use an alternative method for serotyping Salmonella*? If so, what alternative method is used or are you planning to use? If not, are you planning to use an alternative method in the near future?*

- Most NRLs-*Salmonella* still use conventional serotyping by agglutination, often supplemented by a specific PCR assay for confirmation of some *Salmonella* serovars, such as Enteritidis, Typhimurium, monophasic *S.* Typhimurium, Paratyphi B var. Java and vaccine strains.
- WGS-based serotyping is routinely used in only a few countries, generally by laboratories that also serotype human isolates.
- Some NRLs perform WGS, or outsource WGS analysis, when conventional serotyping is problematic, for example because specific antisera are unavailable, or for antimicrobial resistance testing, outbreak investigations and research.
- A few participants consider the use of WGS-based serotyping in the coming year(s). The main barriers mentioned for using WGS-based serotyping are the continued high costs and the longer time needed to obtain results compared with conventional serotyping.

What procedure did you follow to validate the alternative method?

- The few laboratories using WGS-based serotyping followed the requirements of EN ISO 15189 for the accreditation of medical laboratories, sometimes in combination with those of EN ISO 16140-6 for validation of alternative methods for confirmation and typing. However, it was mentioned that EN ISO 16140-6 is not always suitable for validation of WGS-based serotyping.

Interpretation of results obtained using WGS-based serotyping: does the genotype outweigh the phenotype? Should control measures be based on the phenotype or genotype?

- As long as legislation recognises conventional serotyping by slide agglutination as the gold standard, the phenotype should take precedence over the genotype.
- It is important to determine whether differences in virulence exist between phenotypes and genotypes before deciding whether the genotype should take precedence over the phenotype.

- If conventional serotyping is problematic, for example for rough strains, reporting the genotyping results could be considered.
- Further research on the use of WGS-based serotyping remains important. Data should be collected on the prevalence of genotypes and serotypes, and the results should be published. EU legislation can be amended only on the basis of scientifically robust evidence.

What will Salmonella serotyping look like in 5-10 years?

- PCR was also very expensive in the past but is now used by many laboratories because costs have fallen. The same may happen with WGS over the next 5-10 years.
- It is likely that an increasing number of laboratories will use WGS-based serotyping in the future.
- If so, EU legislation may need to be updated to accommodate the new methods and their results. By then, the WGS-derived genotype may take precedence over the phenotypically determined serotype.

3 Wednesday 13 May 2026: Day 2 of the workshop

3.1 Inter-EURLs WG NGS Guidelines for the validation of Whole Genome Sequencing for accreditation & Experiences of the EURL-*Campylobacter*

Hanna Skarin and Bo Segerman, EURL-Campylobacter*, Uppsala, Sweden*

Inter-EURLs working group (WG) on NGS guidelines for the validation of WGS
According to Commission Implementing Regulation (EU) 2025/179 (EC, 2025), whole genome sequencing (WGS) shall be performed on isolates of *Campylobacter coli*, *Campylobacter jejuni*, *Escherichia coli*, *Listeria monocytogenes* and *Salmonella enterica* associated with foodborne outbreaks. For this purpose, National Reference Laboratories and/or Official Laboratories shall be accredited for producing WGS data in accordance with EN ISO/IEC 17025.

Deliverable 12, developed by the Inter-EURLs WG on NGS, provides practical guidance for validation of the WGS workflow in laboratories seeking accreditation.
The document is divided into two parts of the WGS workflow: the 'wet-lab' part, comprising laboratory processes such as bacterial culture, DNA extraction, library preparation and sequencing, and the 'dry-lab' part, comprising the bioinformatics analysis of sequencing data. Each part provides guidance on validation parameters and acceptance criteria. The user laboratory can choose to validate only the 'wet lab' part for production of FASTQ files if this is what is intended to be submitted to the EFSA One Health System. However, the guidance also gives information to cover bioinformatic analysis for laboratories seeking accreditation for the full workflow.

For the 'wet lab' part, validation involves testing of different steps of the sequencing process using representative strains selected within the scope of the intended accreditation. The parameters to be validated include repeatability (consistency under the same conditions), reproducibility (consistency under different conditions), and agreement with other methods. Suggested quality control (QC) metrics for assessing data quality include read depth, base quality, genome size, GC content and contamination levels.

The 'dry lab' part focuses on validating pipelines used to analyse sequencing data. The parameters to be validated include repeatability (whereby pipelines produce identical results under the same conditions), reproducibility (consistent results in different computational environments) and agreement with alternative pipelines. External datasets and well-characterised reference genomes are recommended to be used for this validation.

Deliverable 12 is not a legally binding document. It provides a proposed structured framework to guide laboratories in validating the WGS

workflows but does not replace the quality assurance systems used by individual laboratories.

Experiences of the EURL-Campylobacter
The presentation described the process, experience and practical considerations involved in obtaining accreditation for whole genome sequencing (WGS) of bacterial DNA. The primary aim was to validate a laboratory method for generating sequencing data (FASTQ files) from extracted DNA, excluding downstream bioinformatics analysis. This work was carried out jointly by the Swedish Veterinary Agency (SVA) and the Swedish Food Agency (SFA). Validation was completed in 2022 and accreditation was obtained in 2023.

The method was based on the Illumina DNA Prep Kit using reduced reagent volumes and sequencing on MiSeq instruments at both institutions. Additional sequencing was performed at an accredited core facility using a NovaSeq platform. Validation was performed using 14 bacterial DNA samples representing a diverse range of species, GC contents and antimicrobial resistance (AMR) profiles, including NIST reference materials, well-characterised in-house strains and external PT samples.

The validation experiments assessed repeatability, reproducibility, robustness and agreement with reference data. The assessment criteria were developed using EN ISO 23418:2022 as a key basis and included a reference genome coverage (breadth of coverage) of ≥ 98%, a GC content deviation of ≤ 4% and contamination levels of ≤ 5%. In addition, the ability to reliably identify multilocus sequence typing (MLST) sequence types and AMR genes, and to generate concordant core genome MLST (cgMLST) results, was evaluated as an indicator of sequencing data quality and suitability for downstream analyses.

The accreditation process highlighted several practical considerations for the routine implementation of WGS workflows, including clear quality assessment criteria for individual samples, monitoring sequencing performance over time and the role of controls in accredited sequencing workflows.

Discussion
Q: Do I understand correctly that Regulation (EU) 2025/179 requires NRLs and/or official laboratories to be accredited for WGS analyses in accordance with EN ISO/IEC 17025?
A: Regulation (EU) 2025/179 applies from 23 August 2026. Laboratories will then have until mid-2028 to obtain accreditation. After the amendment to Regulation (EU) 2017/625 is published, which is expected in autumn 2026, accreditation in accordance with EN ISO 15189 will also be permitted for WGS analysis.

Q: Should EN ISO 23418 be followed for validation of WGS?
A: The guidelines developed by the Inter-EURLs WG NGS are based on EN ISO 23418. However, the guidelines are not mandatory. They provide practical and specific recommendations for implementing Article 1(2) of Regulation (EU) 2025/179. This Article, however, is legally binding.

Remark*: Questions and Answers on Deliverable 12: Comments on the Inter-EURLs guidance for the validation of Whole Genome Sequencing for accreditation, has been added to the list of guidance documents produced by the Inter-EURLs working group on NGS (https://www.eurlsalmonella.eu/en/methods/ngs/guidance-documents).*

3.2 EURL Public Health Food- and Water-borne bacteria

Linda Visser, RIVM, Bilthoven, the Netherlands

The EU Reference Laboratory for Public Health on Food- and Water-borne bacteria (EURL-PH-FWDB) has been operational since January 2026. The structure of EURLs for public health is relatively new and was established under Article 15 of Regulation (EU) 2022/2371 on serious cross-border threats to health (EC, 2022). Further information is available on the European Commission's website EU Reference Laboratories for public health - Public Health.

The EURLs for public health are appointed for seven years and are all organised as consortia of European public health institutes. The EURL-PH-FWDB consortium is led by Statens Serum Institut in Denmark and also includes the Dutch National Institute for Public Health and the Environment (RIVM) in the Netherlands and the Istituto Superiore di Sanità in Italy.
Its main tasks are to provide technical support to national public health laboratories through reference diagnostics or reference materials; organise external quality assessments (EQAs); provide trainings and scientific advice; promote collaboration; and to support in (cross-border) outbreak situations. One of the main aims of the new EURL-PH-FWDB is to promote cross-sectoral and global collaboration. We therefore welcome this opportunity to introduce EURL-PH-FWDB to the EURL-*Salmonella* network. The presentation provides a more detailed overview of activities planned for the first year (2026) and discusses opportunities for cross-sectoral collaboration, such as joint trainings.

Discussion
Q: You mentioned plans for a webinar on outbreak investigations. Would the webinar also be open to laboratories working in the food, feed, and animals network?
A: I will need to check and will let you know whether the webinar will also be open to laboratories outside the public health field.

3.3 The critical role of pre-enrichment timing on *Salmonella* detection

Laetitia Bonifait, NRL-Salmonella*, Ploufragan, France*

Salmonellosis is the second most common foodborne bacterial disease in Europe and is mainly associated with the consumption of contaminated poultry and pork products. Detecting *Salmonella* is therefore crucial for public health and food safety. The current standard for *Salmonella* detection requires a pre-enrichment step of 18 h at 37 °C. When large numbers of samples must be analysed each day, this requirement may complicate laboratory organisation and affect *Salmonella* detection.

This study investigated the effect of a delay, referred to as the lag time, between adding the test portion to buffered peptone water (BPW) and placing the BPW sample in the incubator. Both bacterial growth and the probability of detecting *Salmonella* were assessed in faecal samples artificially contaminated with different *Salmonella* strains at various concentrations. After the test portion had been added to BPW, lag times ranging from 45 min to 6 h were tested at both room temperature and 4 °C before incubation.

The results showed that long lag-times could reduce *Salmonella* detection by up to 50%, which effect is particularly notable at low contamination levels.
These findings demonstrate the importance of minimising the delay between adding the test portion to BPW and placing the BPW sample in the incubator to preserve detection accuracy. The lag time should preferably be less than 4 h.

For further details, see Bonifait et al. (2025).

Discussion
Q: Why was this study performed?
A: Some routine laboratories analyse large numbers of samples each day, for example approximately 300 samples per day. They prepare the samples for pre-enrichment throughout the day, leave them on the laboratory bench and place them all in the incubator together at the end of the day. In this way, the incubation time of 18 h ± 2 h can be respected for all samples.

Q: Why do you use a national method rather than EN ISO 6579-1 to analyse samples from the primary production stage? How does this method differ from EN ISO 6579-1?
A: In France, we use EN ISO 6579-1 for analysing samples from the primary production stage, supplemented with an additional selective enrichment medium. In addition to selective enrichment on modified semi-solid Rappaport-Vassiliadis (MSRV) agar, we also use Muller-Kauffmann tetrathionate-novobiocin (MKTTn) broth incubated at 41,5 °C. This option is described in a note in EN ISO 6579-1.

3.4 Activities NRL-*Salmonella* Kosovo

Besart Jashari, NRL-Salmonella*, Prishtina, Kosovo*

The National Reference Laboratory for *Salmonella* (NRL-*Salmonella*) in Kosovo operates within the Food and Veterinary Laboratory (FVL), which is part of the Food and Veterinary Agency (FVA). The laboratory was established in 2007 and plays a central role in ensuring food safety and protecting public health in Kosovo. It works closely with national institutions, including public health authorities, contributing to the control and monitoring of foodborne zoonotic pathogens.

The mission of FVL is to protect human and animal health through reliable laboratory diagnostics, the monitoring of zoonoses and control of food safety throughout the food chain, following the farm-to-fork principle. The laboratory supports the implementation of national

legislation aligned with EU standards and helps safeguard consumers by verifying that food products placed on the market meet safety and quality requirements.

The laboratory has been accredited in accordance with EN ISO/IEC 17025 since 2014 and currently uses 16 accredited methods. It conducts microbiological testing of food and feed samples, including meat and meat products, milk and dairy products, eggs and swabs from carcasses. The laboratory uses internationally standardised methods for the detection and enumeration of key foodborne pathogens, including *Salmonella* spp., *Listeria monocytogenes*, *Escherichia coli* and *Campylobacter* spp.

The detection of *Salmonella* spp. is performed using EN ISO 6579-1:2017/Amd.1:2020, while serotyping is performed in accordance with CEN ISO/TR 6579-3:2014. In addition to conventional microbiological methods, the laboratory uses advanced techniques such as real-time PCR for rapid and specific detection of *Salmonella* spp., including major serovars like *Salmonella* Typhimurium and *Salmonella* Enteritidis. The analytical workflow comprises pre-enrichment, selective enrichment, isolation on selective media, biochemical confirmation and serological identification.

The NRL-*Salmonella* in Kosovo actively participates in proficiency tests (PTs) organised by the EURL-*Salmonella*, including PTs on serotyping, food samples and hygiene swabs. This participation supports continuous quality improvement and the comparability of its results with those of other European laboratories.

Between 2016 and 2025, a total of 1 876 samples, comprising 9 380 units, were tested. These were mainly from poultry and beef products. The results indicated a higher prevalence of *Salmonella* in chicken products (12,8%) than in beef (3%), duck (3,7%) and eggs (0,5%). The serovars most frequently identified were *Salmonella* Infantis, *Salmonella* Minnesota, *Salmonella* Heidelberg, *Salmonella* Enteritidis and *Salmonella* Typhimurium. These serovars are of significant epidemiological importance. Imported products showed, in some categories, a higher proportion of positive samples than domestic products.

The main official activities of NRL-*Salmonella* include microbiological testing of food and feed, participation in national monitoring and control programmes and support of the competent authorities in risk assessment and risk management. Looking ahead, the laboratory aims to implement advanced molecular typing methods such as multilocus sequence typing (MLST) and whole genome sequencing (WGS). These methods will strengthen national surveillance and enhance its role as a reference centre for molecular epidemiology in Kosovo.

Discussion
Q: Is the NRL-*Salmonella* the only laboratory in Kosovo for official control of food and veterinary samples?
A: We are the reference laboratory and Kosovo also has two private laboratories that test samples for food business operators.

Q: Do you also organise PTs for these private laboratories?
A: Not yet. They participate in PTs organised by providers outside Kosovo.

Q: Do you know why *Salmonella* detection rates were particularly high in beef döner?
A: The product may have been contaminated from the processing environment during preparation.

Q: Do any private laboratories in Kosovo analyse samples from the primary production stage (PPS)?
A: Not yet. We are currently establishing methods for analysing *Salmonella*, *Enterobacteriaceae*, *Escherichia coli* and *Listeria* in PPS samples.

3.5 Activities NRL-*Salmonella* Spain

Alexandra Herrera Estévez, NRL-PPS, Algete, Madrid, Spain, and Iria Uhia Castro, NRL-Food, Majadahonda, Madrid, Spain

Spain has three NRLs-*Salmonella*: the Central Veterinary Laboratory (LCV), the National Plant Health and Hygiene Laboratory (LNSVH) and the National Food Centre (CNA). LCV and LNSVH are part of the Ministry of Agriculture, Fisheries and Food, while CNA is part of the Ministry of Social Rights, Consumer Affairs and 2030 Agenda.

LCV has a long history and serves as the NRL for animals and feed. LNSVH is the NRL responsible for primary production of plant origin within the National Programme for Official Control of Agricultural Primary Production.

LNSVH began operating in mid-2021 and was designated as NRL in December 2021. Since then, it has focused on fulfilling the responsibilities and tasks set out in Article 101 of Regulation (EU) 2017/625 (EC, 2017). In 2022, LNSVH established the network of official laboratories for agricultural primary production. Its activities for the network include training courses, proficiency tests, workshops to disseminate essential information and the provision of reference strains. The network operating under the National Programme for Official Control of Agricultural Primary Production is now firmly established and focuses on providing scientific and technical assistance to the laboratories of the network, as well as the competent authorities.

The second part of the presentation covered the National Food Centre (CNA). CNA forms part of the Spanish Agency for Food Safety and Nutrition (AESAN) and is the NRL for *Salmonella* (and other foodborne microorganisms) in food in Spain. As NRL, the CNA gives assistance to the food safety Official Control Laboratories (OCLs) in Spain, which are organised in a network called RELSA. RELSA has a public database that provides real-time information on the laboratories in the network and the tests they perform. This enables the competent food safety authorities to designate laboratories quickly to conduct testing for official controls and other official activities.

The CNA's Computer Programme Management team coordinates and administers the RELSA tool, while the Food Microbiology Service reviews new laboratory and test designations and reports any errors identified. As of March 2026, the *Salmonella* spp. network in RELSA had 63 members. OCLs designated in RELSA are selected to participate in the proficiency tests (PTs) for detection of *Salmonella* spp., organised by CNA as part of its NRL activities. The network performs very well in the PTs, with only minor deviations detected.

CNA also supports laboratories by providing scientific and technical assistance to the OCLs, responding to 124 enquiries in 2025; participates in external evaluation exercises to support OCLs in obtaining method accreditation; organises courses on request; and holds annual Reference Sessions at which the NRL presents updates on its activities. CNA's other activities as NRL-*Salmonella* for food include collaboration with the EURL-*Salmonella* (participation in workshops, PTs, validation studies) and participation in prospective international studies organised by the EU.

Discussion
Q: Could you compare the isolate from the processing unit to the outbreak strain by WGS?
A: Yes. We performed a cluster analysis of these isolates, and all strains detected in the processing unit matched the outbreak strain.

Q: Are the samples for your PTs prepared and shipped by the PT provider? How many samples does each PT include?
A: Yes. The PT provider prepares and ships the samples to the participants. Each PT includes 2 samples, usually one positive and one negative.

Q: Do you often receive isolates from private laboratories for further typing? Approximately how many do you receive each year?
A: We receive some isolates for typing, but I do not know the annual number.

3.6 Do we need an international standard method for detection of *Salmonella* Gallinarum in poultry primary production?

Annet Heuvelink, Royal GD, Deventer, the Netherlands

Under Delegated Regulation (EU) 2019/2035, which supplements the Animal Health Law, hatcheries and breeding poultry farms must monitor for the presence of *Salmonella enterica* serotype Gallinarum biovar Pullorum (*Salmonella* Pullorum) and *Salmonella enterica* serotype Gallinarum biovar Gallinarum (*Salmonella* Gallinarum). The compulsory monitoring programme includes testing of different matrices by bacteriological culture. However, no international standard is currently available that describes the culture steps for the detection of *Salmonella* Pullorum and *Salmonella* Gallinarum, and the performance characteristics of the bacteriological methods used by different laboratories are unknown.

The need for a standardised bacteriological method for detection of *Salmonella* Pullorum and *Salmonella* Gallinarum has been discussed within CEN/TC 469 'Animal health diagnostic analyses'. As a first step, a questionnaire was prepared in the Netherlands, with support from the EURL-*Salmonella*, to collect information on the methods used by official control laboratories in different countries. Laboratories were asked to provide information on the procedures used to test samples collected at hatcheries and breeding farms for monitoring of *Salmonella* Pullorum and *Salmonella* Gallinarum.

The questionnaire responses showed that the monitoring is performed differently between countries. Differences were reported in several critical steps of the bacteriological culture procedure, including sample preparation, incubation temperature, the use of non-selective pre-enrichment and selective enrichment and the choice of culture media. These differences indicate that laboratories currently use a variety of approaches for the detection of *Salmonella* Pullorum and *Salmonella* Gallinarum.

The responses also showed clear interest among laboratories and experts in continuing work on this subject. Several respondents indicated that further harmonisation would be useful, particularly to support comparable testing within the framework of the compulsory monitoring programme. The questionnaire findings will therefore be used as input for further discussions within CEN/TC469 on the possibilities for standardisation of the bacteriological culture method for detection of *Salmonella* Pullorum and *Salmonella* Gallinarum

Discussion
Q: What do you mean by 'correct storage of the samples'?
A: From our own experience, we have learned that the time between opening the animals and starting the bacteriological examinations should be kept as short as possible. The analyses should begin immediately after the animals are opened. It is best not to refrigerate opened animals, as this may influence the results negatively due to high numbers of background flora.

Q: We are experiencing problems obtaining selenite. Can the media specified in EN ISO 6579-1, such as BPW and MKTTn, also be used?
A: We also have difficulty obtaining selenite and in addition we are not permitted to use it in our laboratory. We start immediately with selective enrichment of the samples, without pre-enrichment in BPW. However, some other laboratories do start with BPW. This is only possible if the samples are not heavily contaminated.

Q: Do we need to use culture methods? Could we use serological methods instead? Does vaccination cause problems in some countries?
A: We still use serological methods to test for *Salmonella* Gallinarum at breeding farms. Indeed it is true that vaccination against *Salmonella* Enteritidis can cause a cross-reaction in the serological method for *Salmonella* Gallinarum. The method used for serological monitoring must therefore distinguish between a serological response to *Salmonella* Enteritidis vaccination and the presence of *Salmonella* Gallinarum. However, for hatcheries it is prescribed to use a bacteriological culture

method for detection of *Salmonella* Gallinarum and serological methods are not permitted.

Q: You mentioned that *Salmonella* Gallinarum is not always present in the intestines. However, you showed that several laboratories still test the intestines for *Salmonella* Gallinarum. Is that correct?
A: We found that a few laboratories tested only the intestines, while most laboratories also tested other organs. *Salmonella* Gallinarum can be readily detected in sick animals, but other organs must also be tested for monitoring purposes.

Q: What is the answer to the question 'Do we need an international standard?'
A: Most laboratories responding to the survey favoured developing a standard method for detection of *Salmonella* Gallinarum. We also consider such a standard important, so that laboratories use the same method when performing the analyses required under Delegated Regulation (EU) 2019/2035.

Q: National control programmes for zoonotic *Salmonella* include sampling requirements for poultry flocks. Can these samples also be used for testing for *Salmonella* Gallinarum?
A: This is difficult because the sample types used to test for zoonotic *Salmonella* differ from those used to test for *Salmonella* Gallinarum.

3.7 Activities EURL-*Salmonella* 2026-2027, Discussion on general items, Closure

Kirsten Mooijman, head of EURL-Salmonella*, Bilthoven, the Netherlands*

Kirsten Mooijman summarised the EURL-*Salmonella* work programme for 2026-2027. The current EURL activities are part of the three-year grant agreement for 2025-2027. The activities relate to Article 94(2) of Regulation (EU) 2017/625 (EC, 2017) and are divided into four main activities, each comprising one or more sub-activities.

Activity 1 – To ensure availability and use of high-quality methods and to ensure high-quality performance by NRLs
Sub-activity 1.1 Analytical methods
Objectives:

- Standardisation of methods (ISO and CEN activities);
- Monitoring developments in (alternative) methods;
- Providing NRLs with information on developments in relevant standardised or new analytical methods

Sub-activity 1.2 Inter-EURLs working group on NGS
Objectives:

- Promoting the use of NGS across the EURL networks;
- Building capacity to produce and use NGS data within the EU;
- Ensuring liaison between the work of the EURLs and the work of EFSA and ECDC on NGS.

The working group comprises 8 biological EURLs. Several NGS-related activities have been defined. For each activity guidance documents are

being prepared and published on the EURLs' websites (see also https://www.eurlsalmonella.eu/methods/ngs).

Sub-activity 1.3 Proficiency tests (PTs)
Objective: To evaluate the performance of the NRLs-*Salmonella* for detection and typing of *Salmonella* through interlaboratory comparisons, referred to as proficiency tests.

Three PTs are organised each year:
- Spring: PT on detection of *Salmonella* in food or animal feed samples;
- Late summer or early autumn: PT on detection of *Salmonella* in samples from the primary production stage (PPS);
- Autumn or winter: PT on typing of *Salmonella.*

Activity 2 – To provide scientific and technical assistance to NRLs
Sub-activity 2.1 Workshop
Objective: To exchange information on the activities of the NRLs-*Salmonella* and the EURL-*Salmonella* and on (new) developments in the relevant work field.

EURL-*Salmonella* aims to organise an online or hybrid workshop every other year. A hybrid workshop held on site will generally last 1,5 days, while an online workshop will last one day or two half-days. The 2027 workshop will be held as a virtual meeting.

Sub-activity 2.2 Training courses
Objective: To train NRLs-*Salmonella* in specific areas of work.

The following training courses are foreseen:
- Joint EURLs training on NGS. In 2026, this training comprised 2 parts: a theoretical online session in May and a practical on-site session at the EURL-AMR in Denmark in June. The location of the 2027 training has not yet been decided.
- Individual training for NRLs, either at an NRL's request or on the advice of the EURL-*Salmonella*, for example following unsatisfactory performance in a PT.

Sub-activity 2.3 Scientific advice and support of NRLs
Objectives:
- Providing NRLs-*Salmonella* with scientific and technical assistance in relevant areas of work;
- Performing confirmatory testing and/or typing of samples or isolates for NRLs-*Salmonella*, where appropriate;
- Performing WGS analyses of isolates from NRLs-*Salmonella* for outbreak investigations;
- Maintaining the EURL-*Salmonella* website and keeping its information up to date (https://www.eurlsalmonella.eu);
- Publishing four newsletters each year on the website.

Activity 3 – To provide scientific and technical assistance to the European Commission and other organisations
Sub-activity 3.1 Scientific advice and support for the European Commission and other organisations
Objectives:

- Providing the European Commission's Directorate-General for Health and Food Safety (DG SANTE) with scientific and technical assistance in the relevant field;
- Supporting DG SANTE, EFSA and NRLs in the Member States in the event of (international) *Salmonella* outbreaks;
- Participating in the EFSA-ECDC Advisory Board on the management and sharing of molecular typing data of isolates in the One Health WGS database;
- Cooperating with other biological EURLs.

Activity 4 – Reagents and reference collections
Sub-activity 4.1 Reference strains and reference materials
Objectives:

- Providing information on available culture collections and suppliers of microbiological reference materials;
- Publication of a reference collection of WGS data.

This sub-activity has been merged with other sub-activities.

Update on ISO/CEN activities 2026-2027
In addition to the 2026-2027 work programme, an update was provided on several relevant ISO and CEN activities, particularly those concerning *Salmonella*.

ISO/TC 34/SC 9/WG 9 Detection of Salmonella
WG 9 is currently collecting missing performance characteristics for EN ISO 6579-1 and drafting Amendment 2 to this standard, entitled 'Performance characteristics'. Amendment 2 will replace clause 11 and Annex C of EN ISO 6579-1:2017.

Performance characteristics for regular test portion sizes (e.g. 25 g) have been collected from interlaboratory studies (ILS) conducted specifically to validate EN ISO 6579-1 and from published validation studies of alternative methods. These studies provided performance characteristics for regular test portion sizes in all relevant product categories:

- Broad range of food (validated for at least five different food categories);
- Pet food and animal feed;
- Environmental samples of the food or feed production;
- Samples from the primary production stage.

For larger test portion sizes (e.g. 375 g), no ILS data are available. It was therefore agreed at the 2025 plenary meeting of ISO/TC 34/SC 9 that WG 9 would search the literature for data from method comparison studies (MCS) conducted in a single expert laboratory as part of the validation of alternative methods using larger test portions.

The literature review was conducted in September and October 2025 and identified 20 MCS in which larger test portions, mainly 375 g, had been tested in validation studies. Only studies in which validation had been performed in accordance with EN ISO 16140-2, using EN ISO 6579-1 as the reference method, were selected. The 20 MCS covered four different food categories. They also covered the category pet food and animal feed and the category environmental samples of the food or feed production. The LOD_{50} values obtained for the larger test portions were close to the theoretical value of 0,7 cfu/test portion (see EN ISO 17468), ranging from 0,2 cfu/test portion to 3,1 cfu/test portion.

The joint ISO/TC 34/SC 9 subgroup 'Review evaluation/validation protocols for ISO standards', comprising WG 2 'Statistics' and WG 3 'Method validation', reviewed the collected data from the 20 method comparison studies in January 2026. The joint subgroup WG 2 & WG 3 concluded that the LOD_{50} values did not differ significantly between larger test portions (375 g or 200 g) and regular test portions (25 g). The subgroup therefore considered an ILS for larger test portions unnecessary for these categories.

Because this decision could also affect other standards developed by ISO/TC 34/SC 9, the joint subgroup WG 2 & WG 3 decided to draft guidelines on using MCS data for larger test portions. The document is entitled 'Guidelines for the use of method comparison study data on larger test portion sizes derived from alternative method validation studies for setting performance characteristics of reference methods'. The guidelines were sent to the members of ISO/TC 34/SC 9 at the end of April 2026 for comments by the end of May 2026. The final guidelines were shared with SC 9 members in July 2026.

The following next steps are planned for EN ISO 6579-1/Amd.2:

- July-August 2026: Preparation of draft Amendment 2 (after finalisation of the guidelines on using MCS data) and sharing the draft document with WG9.
- September-October 2026: WG 9 comment period on draft Amendment 2
- October-December 2026: Discuss the WG 9 comments, prepare the committee draft (CD) of Amendment 2 and launch the CD ballot in SC 9
- January-March 2027: Comment period on CD Amendment 2 in SC9.
- April-June 2027: Discuss the SC 9 comments on CD Amd.2 and prepare DIS Amendment 2.

ISO/TC 34/SC 9/WG 10 Typing of Salmonella
From September to December 2025, the systematic review took place of CEN ISO/TR 6579-3, 'Microbiology of the food chain – Horizontal method for the detection, enumeration and serotyping of *Salmonella* – Part 3: Guidelines for serotyping of *Salmonella* spp.'

The majority of countries that voted supported confirming the document. Only four countries submitted comments, most of which were editorial. A small number of technical comments suggested improvements to the information rather than identifying errors in the

document. Two countries proposed either adding information on WGS serotyping to CEN ISO/TR 6579-3 or drafting a new part of the ISO 6579 series covering this information.

As a result of the systematic review, WG10 recommended that ISO/TC 34/SC 9:

- Confirm CEN ISO/TR 6579-3 for the time being;
- Begin discussing options for standardising WGS serotyping after publication of the new White-Kauffmann-Le Minor scheme, which will include MLST data (Grimont and Weill, 2007).

4 Evaluation of the workshop

4.1 Introduction

At the end of the workshop, the participants received a link to an evaluation form asking for their views on the workshop. The form for online participants contained nine questions and the form for on-site participants contained 14 questions. The two forms had six questions in common (see Appendix 3).

For several questions, participants were asked to give a score from 1 to 5: very poor (1), poor (2), fair (3), good (4) or very good (5). Participants could also add comments. Two questions were open-ended and invited participants to give their views.

Although the evaluation form was sent to all participants, EURL-*Salmonella* staff was excluded from the evaluation, leaving 74 eligible participants. In total, 37 participants completed an evaluation form: 25 completed the on-site form and 12 completed the online form. This represents a response rate of 50%.

Section 4.2 presents the scores for each question and summarises the comments. Subsection 4.2.1 covers questions specific to on-site participants, subsection 4.2.2 covers those specific to online participants and subsection 4.2.3 covers questions common to both groups.

4.2 Evaluation results

4.2.1 Specific questions for on-site participants

What is your opinion on the booking of the tickets by EURL-Salmonella (if relevant)?

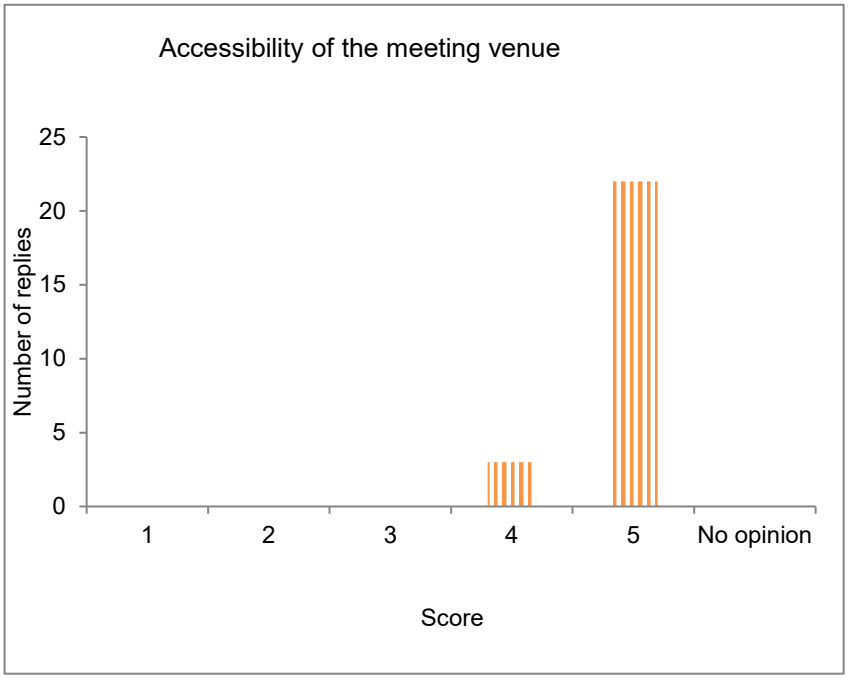
Figure 4.1 shows that participants who received tickets through the EURL-*Salmonella* were satisfied with the service. Of the 20 respondents, 16 gave the highest score of 5, three participants gave a score of 4 and one gave a score of 1. No comments were provided to explain the single very low score.

*Figure 4.1 Scores for the question 'Opinion on booking of the tickets by EURL-*Salmonella'



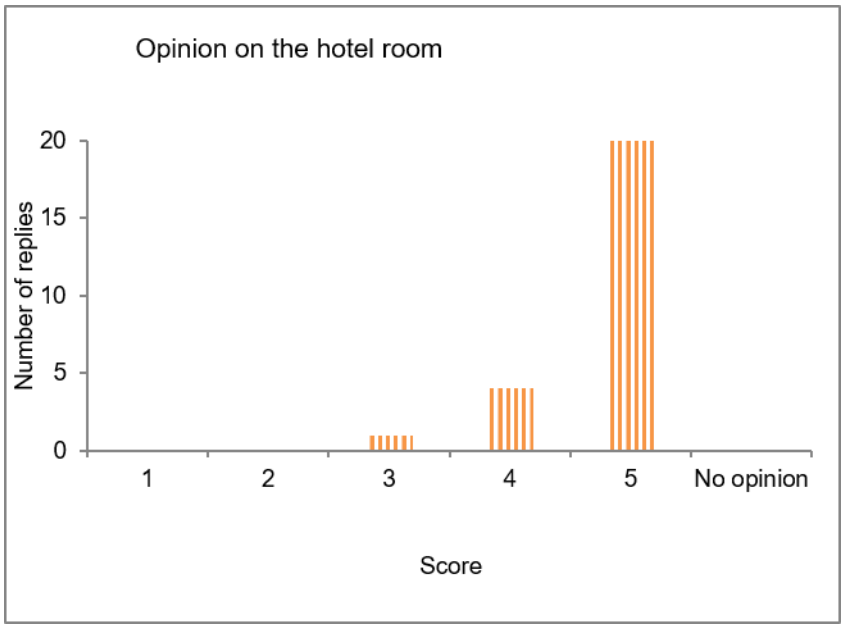
What is your opinion on how easy (high score) or difficult (low score) it was to reach the meeting venue?
Figure 4.2 shows that all on-site respondents considered the meeting venue to be easy to reach (scores 4-5).

Figure 4.2 Scores for the question 'Opinion on the accessibility of the meeting venue'



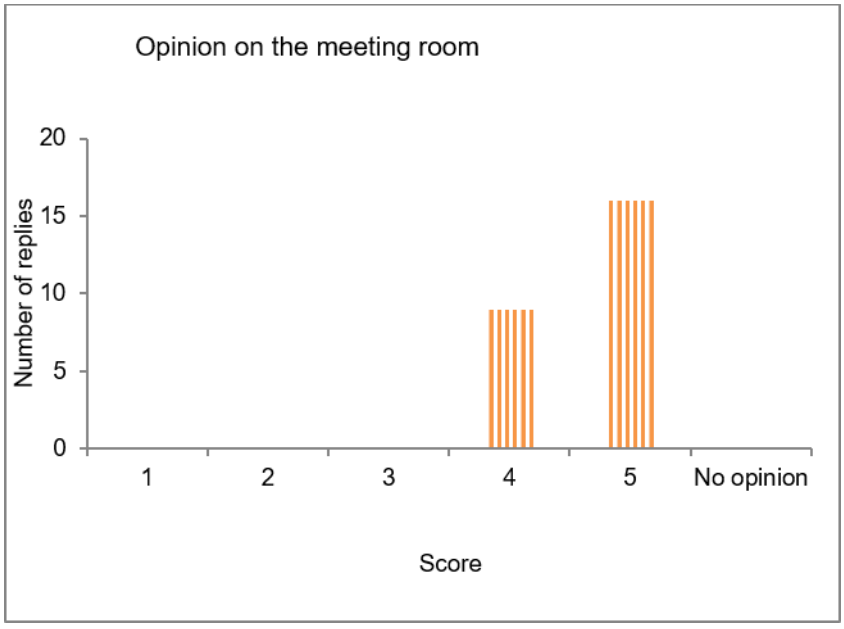
What is your opinion on the hotel room?
Figure 4.3 shows that most on-site respondents were satisfied with the hotel room, awarding scores of 4 or 5. One respondent rated the hotel room as fair, giving it a score of 3.

Figure 4.3 Scores for the question 'Opinion on the hotel room'



What is your general opinion on the meeting room?
Figure 4.4 shows that all on-site respondents were satisfied with the meeting room, awarding scores of 4 or 5. One respondent commented: 'No power outlets available for laptops'.

Figure 4.4 Scores for the question 'Opinion on the meeting room'

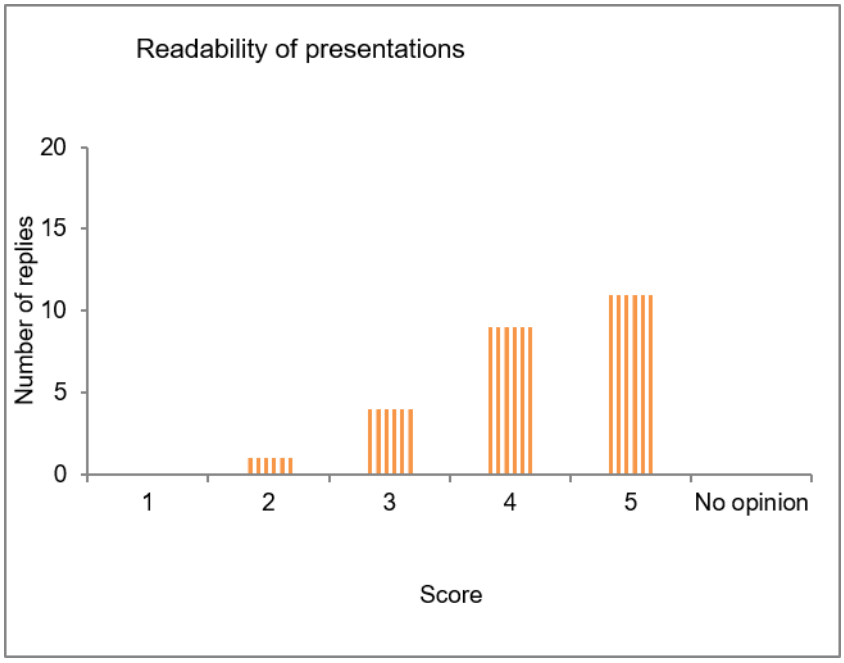


What is your opinion of the readability of the presentations on the screen?
Figure 4.5 shows that the scores for presentation readability ranged from 2 (poor) to 5 (very good).

The following comments were made:

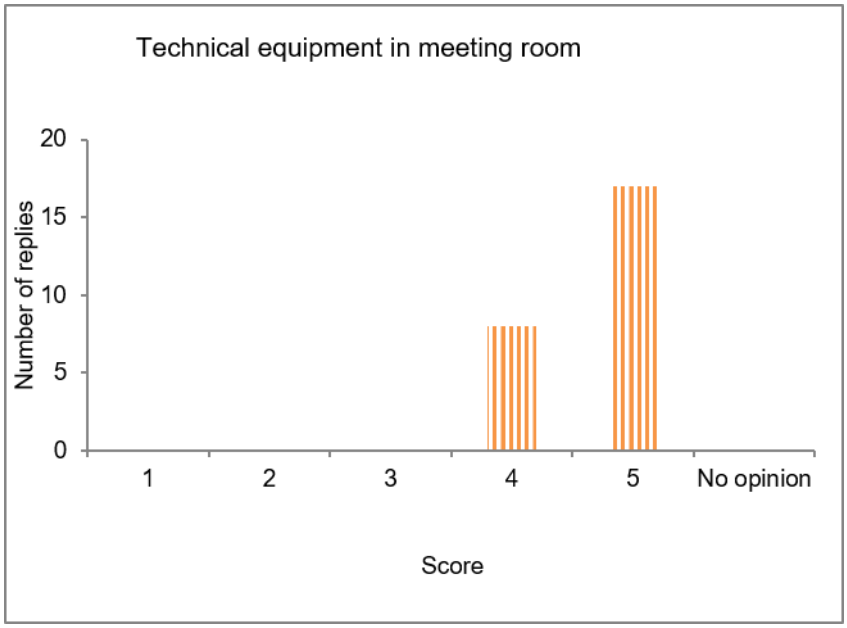
- 'The presentations of the online presenters would have been more readable if these were shared in full mode, without showing the presenter and participants'.
- 'Some speakers presented too detailed tables and graphs with poor resolution'.
- 'From the last rows it was a bit difficult to read the slides' (two respondents).

Figure 4.5 Scores for the question 'Opinion of the readability of the presentations'



What is your opinion of the technical equipment in the meeting room?
Figure 4.6 shows that most respondents rated the technical equipment in the meeting room as good (score 4) or very good (score 5).

Figure 4.6 Scores for the question 'Opinion of the technical equipment in the meeting room'

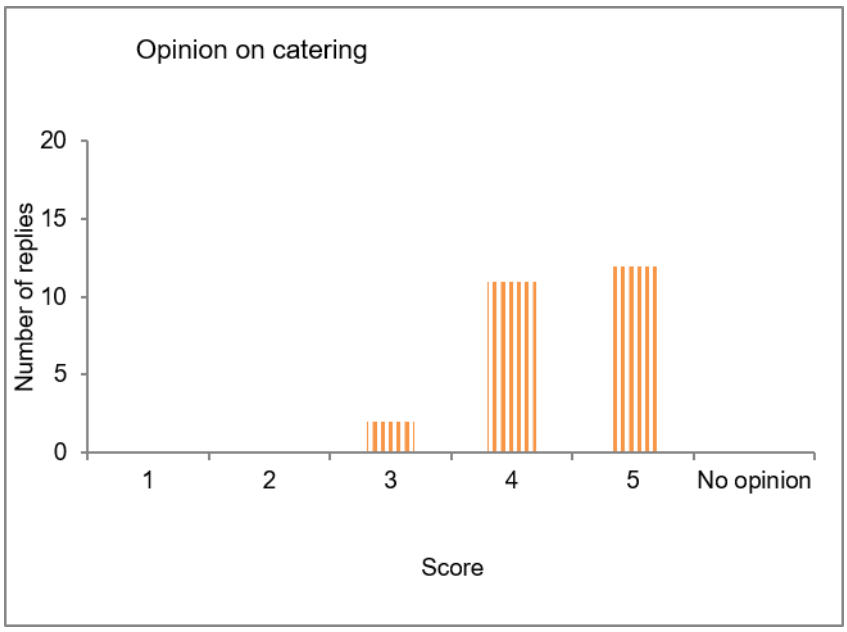


What is your opinion on the catering provided during the workshop?
Figure 4.7 shows that the scores for the catering ranged from 3 (fair) to 5 (very good).

The following comments were made:

- 'Although it was asked for special diets in advance (happy about that!), no information on gluten containing ingredients was given by the hotel (however it was given for soya or vegan diet). So I had to ask before and on the second day there was even no gluten free warm lunch option at all, except for the soup. That was a pity, but in general the food I was able to eat was really good'.
- 'The smoothie was very delicious'.
- 'The lunches were tasteless and the vegetarian food was not very good. The dinner however on Tuesday was fine'.

Figure 4.7 Scores for the question 'Opinion of the catering'

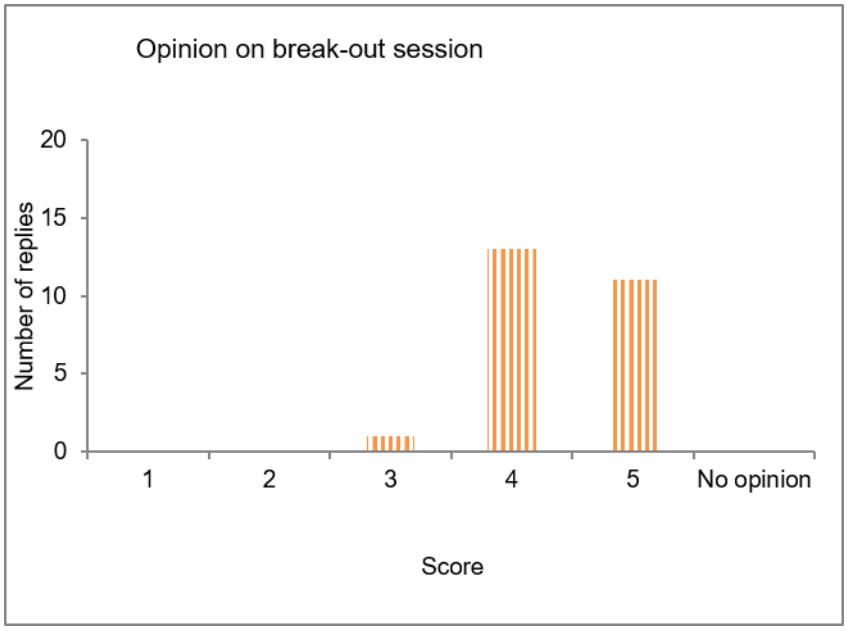


What is your opinion on the break-out session on the first day of the workshop?
Figure 4.8 shows that most respondents rated the break-out session as good (score 4) or very good (score 5). Only one participant rated it as fair (score 3).

The following remarks were made:

- 'Discussions went well, but the session could have been better prepared'.
- 'It was somewhat noisy as all three groups were in the same room. Separate rooms would help'.

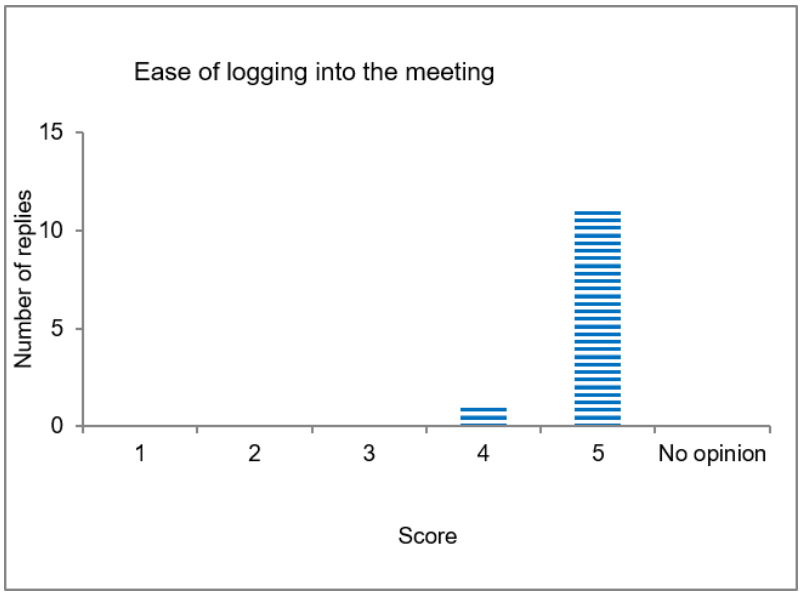
Figure 4.8 Scores for the question 'Opinion on the break-out session'



4.2.2 *Specific questions for online participants*

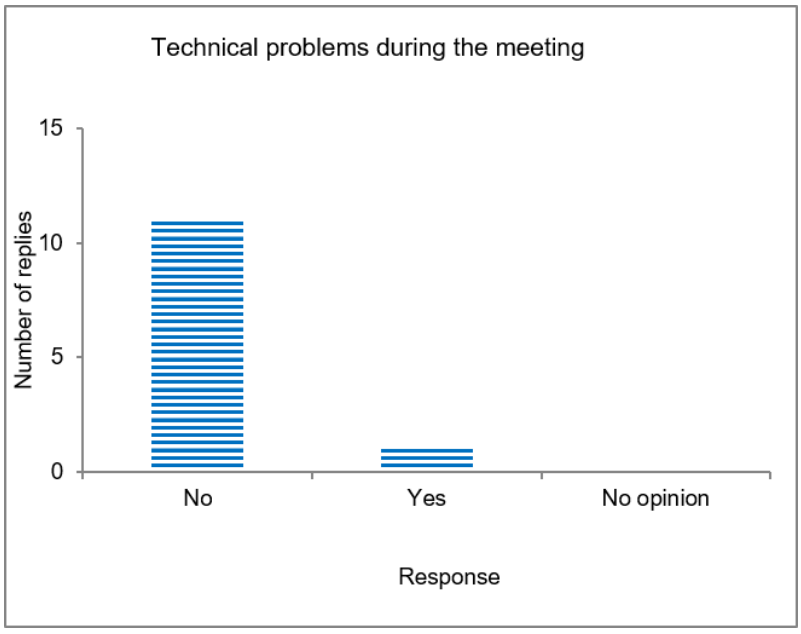
What is your opinion on the ease of logging into the meeting?
All online respondents found it easy to log in to the meeting (Figure 4.9).

Figure 4.9 Scores for the question 'Opinion on the ease of logging into the meeting'



Did you experience any technical problems during the meeting?
One respondent reported minor technical problems when using the app but found that accessing the meeting through a web browser worked better (Figure 4.10).

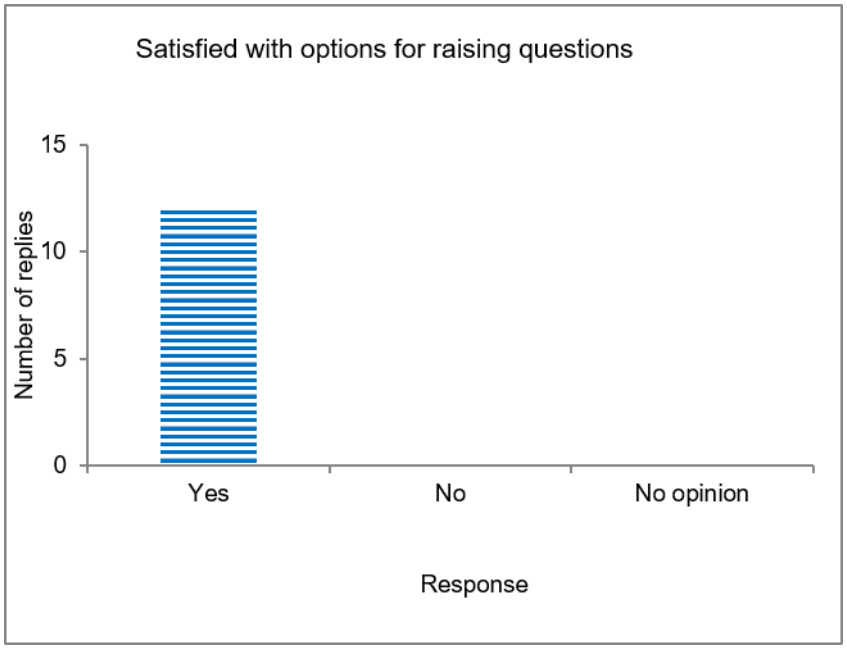
Figure 4.10 Responses to the question 'Did you experience any technical problems during the meeting?'



Were you satisfied with the options for raising questions during the meeting (mainly chat function)?
All online respondents who expressed an opinion were satisfied with the options for raising questions and one respondent selected 'No opinion' (Figure 4.11).

One respondent commented.
'The time after a presentation to check if there was online questions was too short and later the online chat box was not controlled so that the late coming questions had to be addressed later. Giving few minutes after a presentation, so that people can write their questions would improve the situation'.

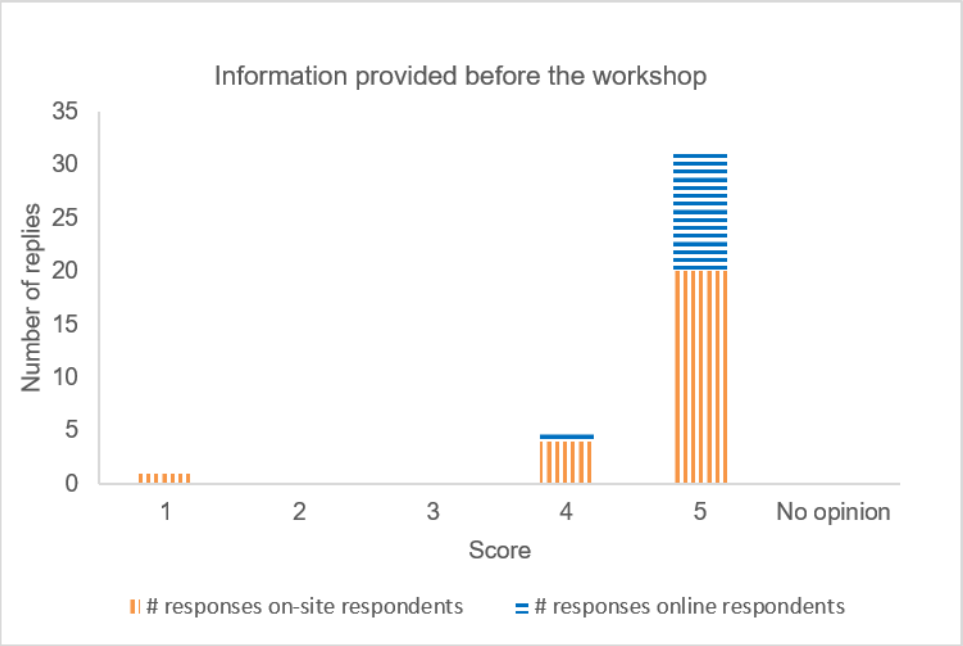
Figure 4.11 Responses to the question 'Were you satisfied with the options for raising questions during the meeting?'



4.2.3 *Questions for both on-site and online participants*

What is your opinion of the information provided before the workshop?
Most on-site and online respondents rated the information provided before the workshop as good (score 4) or very good (score 5). One on-site respondent gave it a score of 1 (very poor) but provided no further information (Figure 4.12). One online respondent commented: 'Concise but detailed information.'

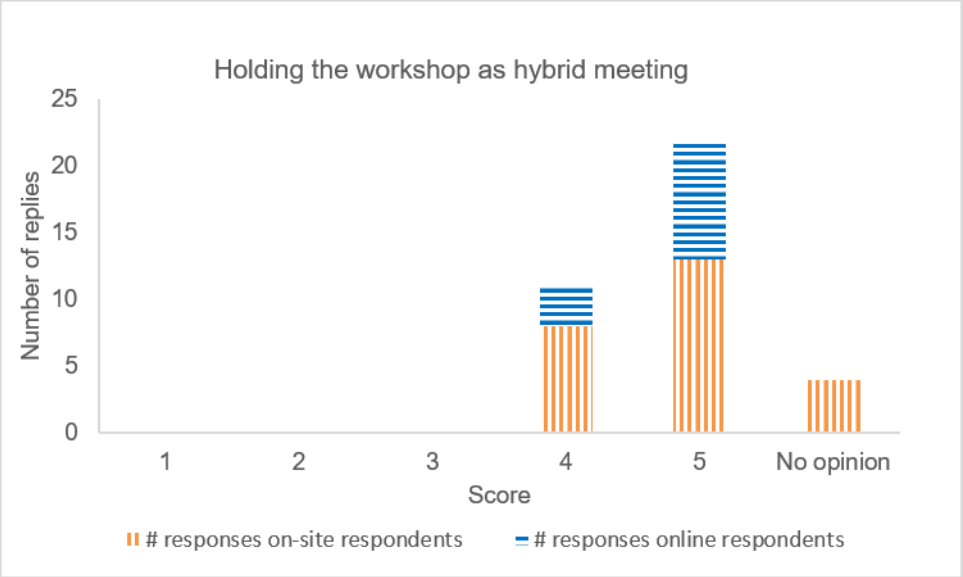
Figure 4.12 Scores for the question 'What is your opinion of the information provided before the workshop?'



What is your opinion of holding the workshop as a hybrid meeting?
Figure 4.13 shows that respondents in both groups rated the hybrid format as good (score 4) or very good (score 5). Four respondents selected 'No opinion'.
The following comments were made:

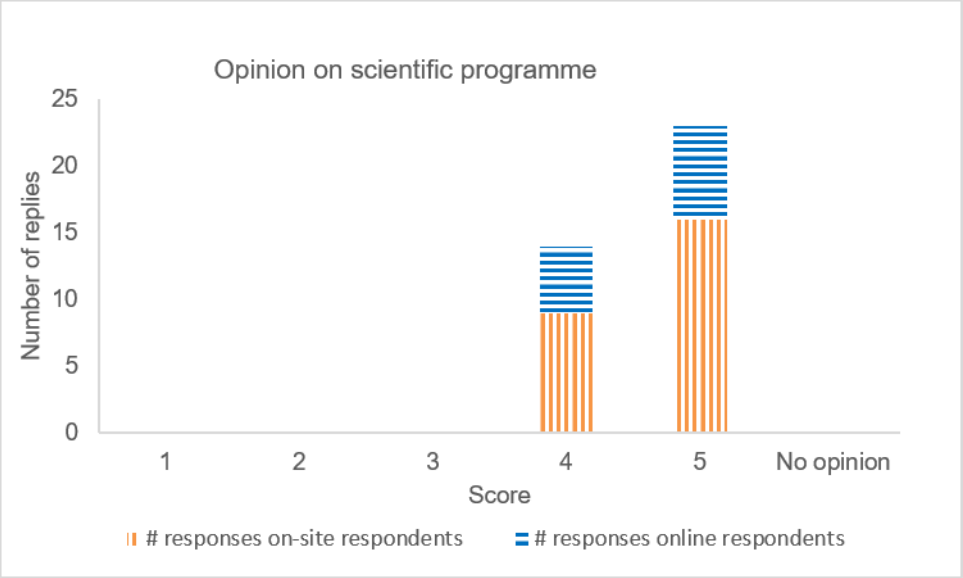
- 'I prefer the presenters to be at the location instead of online.'
- 'I prefer physical meetings as it has a great value to speak with each other'.

Figure 4.13 Scores for the question 'What is your opinion of holding the workshop as a hybrid meeting?'



What is your opinion on the scientific programme of the workshop?
All respondents, both on-site and online, rated the workshop's scientific programme as good (score 4) or very good (score 5) (Figure 4.14). One respondent commented.
'I really enjoyed the topics covered this year, which included: WGS; *Salmonella* Gallinarum / Pullorum; alternative/combined methods; serotyping'.

Figure 4.14 Scores for the question 'What is your opinion on the scientific programme of the workshop?'



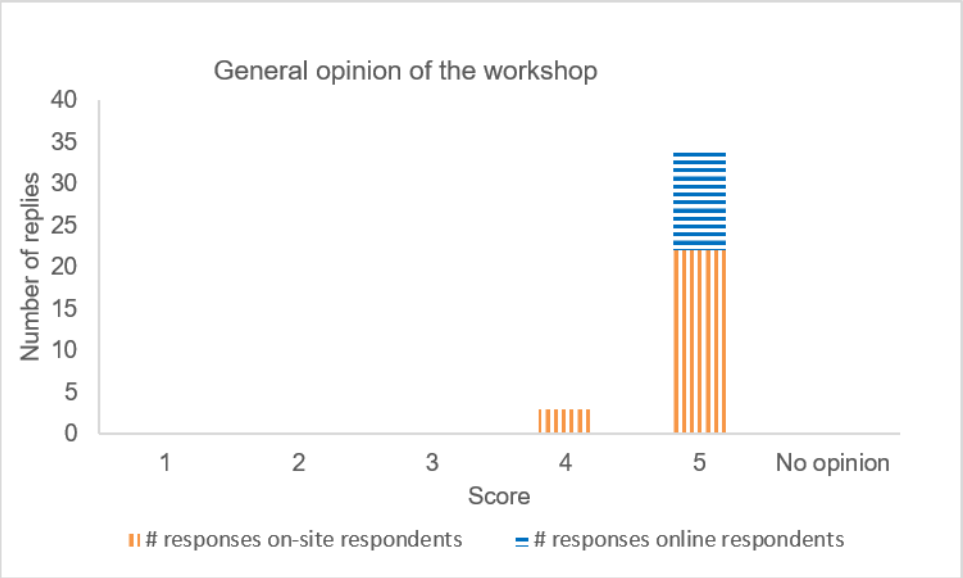
Would you like to comment on any specific presentations, or did you miss information on certain subjects?
This was an open-ended question. Two comments were received:

- 'Serotyping.'
- 'The *Salmonella* Gallinarum presentation was very helpful.'

What is your general opinion of the workshop?
All respondents rated the workshop overall as good (score 4) or very good (score 5), see Figure 4.15. The following comments were made:

- 'Keep up the good work.'
- 'Interesting and well-conducted workshop!'

Figure 4.15 Scores for the question 'What is your general opinion of the workshop?'



Do you have any comments or suggestions for future workshops?
This was another open-ended question. The following responses were received:

- 'Everything was wonderful!'
- 'Thank you very much for the workshop. It was particularly interesting and very informative. One point that could perhaps be discussed in the future is the organisation of interlaboratory trials by the other NRL members.'
- 'I especially liked the scientific talks, like the effect of lag phase by Laetitia. It would be nice to have more presentations of experiments or more elaborate information on e.g. method comparison studies.'
- 'It would be great if the EURLs could better coordinate the timing of the workshops, as many members of the NRL participate in workshops for several pathogens. At the moment, all workshops are either online or in person within the same year, and they are all concentrated in either May or October. For example, I was in Copenhagen last week (EURL AMR), this week in Zaandam (*Salmonella*), and next week in Paris (*Listeria* and CPS). In October, the remaining EURL *Campylobacter* workshops will take place in person. If half of the EURLs ran online workshops in year X and the other half in person, and then switched in year Y, it would be much less stressful (this is feedback from many people I have spoken to).'
- 'It would be interesting to hear about *Salmonella* in companion animals or 'non-production animals' as well'.

4.3 Discussion and conclusions of the evaluation

Like in 2024, technical support was arranged for this hybrid workshop. This helped to ensure optimal presentation and sound quality for both on-site and online participants.

Some speakers were unable to attend in person because of time or financial constraints or for other reasons, and therefore gave their presentations online. Although these presentations worked well from a technical perspective, on-site presentations are preferable because they allow easier interaction between the speaker and the audience. At future hybrid meetings, online participants should also be given more time to ask questions after each presentation, and the chat should be checked more regularly for online questions.

For the second time in the history of the EURL-*Salmonella* workshop, participants discussed a topic in small groups during a break-out session. This year, they discussed alternative methods for *Salmonella* serotyping and the interpretation of the results. Participants generally appreciated the small-group discussion, although many may have found the topic somewhat complex.

Participants evaluating an earlier workshop requested more presentations on research projects. The organisers sought to meet this request at the current workshop, and participants appear to have appreciated the additional research presentations.

The evaluation showed that participants were satisfied with the organisation, technical aspects and scientific programme of the second hybrid EURL-*Salmonella* workshop.

Acknowledgements

The author would like to thank the following RIVM/EURL-*Salmonella* staff members for their invaluable help in organising the workshop:

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The author would also like to thank all the other colleagues who contributed to the workshop by giving interesting presentations and/or participating in the discussions. Without their contributions the workshop could not have been such a success.

Thank you all very much!

References

Bonifait, L., Baugé, L., Rose, V., Gateau, J., Rouxel, S., Bougeard, S. and Chemaly, M., 2025. Influence of the time interval before pre-enrichment on *Salmonella* detection accuracy. EURL-*Salmonella* Newsletter, Vol. 31, no. 3, September 2025. https://www.eurlsalmonella.eu/en/documenten/eurl-salmonella-newsletter-september-2025 (access date 21-08-2026).

CEN ISO/TR 6579-3:2014. Microbiology of the food chain – Horizontal method for the detection, enumeration and serotyping of *Salmonella* – Part 3: Guidelines for serotyping of *Salmonella* spp. International Organization for Standardization, Geneva, Switzerland.

Diddens, R.E. and Mooijman, K.A., 2026a. EURL-*Salmonella* Proficiency Test Primary Production Stage 2025. Detection of *Salmonella* in chicken faeces samples. RIVM report 2025-0151. National Institute for Public Health and the Environment, Bilthoven, the Netherlands. https://www.rivm.nl/bibliotheek/rapporten/2025-0151 (access date 18-08-2026).

Diddens, R.E. and Mooijman, K.A., 2026b. Interim summary report EURL-*Salmonella* Proficiency Test Food 2026. Detection of *Salmonella* in canned tomatoes. Z&O letter report 2026-0070. National Institute for Public Health and the Environment, Bilthoven, the Netherlands. https://www.eurlsalmonella.eu/en/documenten/interim-summary-report-eurl-salmonella-pt-food-2026 (access date 18-08-2026).

EC, 2003. Directive 2003/99/EC of the European Parliament and of the Council of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EEC and repealing Council Directive 92/117/EEC. Official Journal of the European Union L325: 12 December 2003. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003L0099&qid=1787053358155 (access date 18-08-2026).

EC, 2005. Commission Regulation (EC) No 2073/2005 of 15 November 2005 on microbiological criteria for foodstuffs. Official Journal of the European Union L338: 22 December 2005. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32005R2073&qid=1787053593323 (access date 18-08-2026).

EC, 2017. Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products. Official Journal of the European Union L 95, 7 April 2017. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0625&rid=3 (access date 18-08-2026).

EC, 2019. Commission Delegated Regulation (EU) 2019/2035 of 28 June 2019 supplementing Regulation (EU) 2016/429 of the European Parliament and of the Council as regards rules for establishments keeping terrestrial animals and hatcheries, and the traceability of certain kept terrestrial animals and hatching eggs. Official Journal of the European Union L 314, 5 December 2019. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R2035&qid=1787053939601 (access date 18-08-2026).

EC, 2022. Regulation (EU) 2022/2371 of the European Parliament and of the Council of 23 November 2022 on serious cross-border threats to health and repealing Decision No 1082/2013/EU. Official Journal of the European Union L 314, 6 December 2022. https://eur-lex.europa.eu/eli/reg/2022/2371/oj (access date 18-08-2026).

EC, 2025. Commission Implementing Regulation (EU) 2025/179 of 31 January 2025 on the collection and transmission of molecular analytical data within the frame of epidemiological investigations of food-borne outbreaks in accordance with Directive 2003/99/EC of the European Parliament and of the Council. Official Journal of the European Union, 3 February 2025. https://eur-lex.europa.eu/eli/reg_impl/2025/179/oj (access date 18-08-2026).

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2025. The European Union One Health 2024 Zoonoses Report. EFSA Journal, 23(12), e9759. https://doi.org/10.2903/j.efsa.2025.9759

EN ISO 6579-1:2017. Microbiology of the food chain – Horizontal method for the detection, enumeration and serotyping of *Salmonella* – Part 1: Detection of *Salmonella* spp. International Organization for Standardization, Geneva, Switzerland.

EN ISO 6579-1:2017/A1:2020. Microbiology of the food chain – Horizontal method for the detection, enumeration and serotyping of *Salmonella* – Part 1: Detection of *Salmonella* spp. – Amendment 1: Broader range of incubation temperatures, amendment to the status of Annex D, and correction of the composition of MSRV and SC. International Organization for Standardization, Geneva, Switzerland.

EN ISO 15189:2024. Medical laboratories – Requirements for quality and competence. International Organization for Standardization, Geneva, Switzerland.

EN ISO 16140-2:2016. Microbiology of the food chain – Method validation – Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method. International Organization for Standardization, Geneva, Switzerland.

EN ISO 16140-6:2019. Microbiology of the food chain – Method validation – Part 6: Protocol for the validation of alternative (proprietary) methods for microbiological confirmation and typing procedures. International Organization for Standardization, Geneva, Switzerland.

EN ISO/IEC 17025:2017. General requirements for the competence of testing and calibration laboratories. International Organization for Standardization, Geneva, Switzerland.

EN ISO 17468:2023. Microbiology of the food chain – Technical requirements and guidance on the establishment or revision of a standardized reference method. International Organization for Standardization, Geneva, Switzerland.

EN ISO 23418:2022. Microbiology of the food chain – Whole genome sequencing for typing and genomic characterization of bacteria – General requirements and guidance. International Organization for Standardization, Geneva, Switzerland.

Grimont, P.A.D. and Weill, F.-X., 2007. Antigenic formulae of the *Salmonella* serovars, 9th ed. WHO Collaborating Centre for Reference and Research on *Salmonella*. Institut Pasteur, Paris, France. https://www.pasteur.fr/sites/default/files/veng_0.pdf (access date 18-08-2026).

Jacobs-Reitsma, W.F., Verbruggen, A.J. and Mooijman, K.A., 2025. Interim summary report EURL-*Salmonella* Proficiency Test Serotyping 2025. Z&O letter report 2025-0109. National Institute for Public Health and the Environment, Bilthoven, the Netherlands. https://www.eurlsalmonella.eu/en/documenten/interim-summary-report-eurl-salmonella-pt-serotyping-2025 (access date 18-08-2026).

List of abbreviations

A	Answer
AMR	Antimicrobial resistance
BPW	Buffered peptone water
CEN	European Committee for Standardization
CEN/TC 463	European Committee for Standardization, Technical Committee 463 – Microbiology of the food chain
cfu	colony-forming units
cg/wgMLST	core genome/whole genome multilocus sequence typing
DG SANTE	Directorate-General for Health and Food Safety
EC	European Commission
ECDC	European Centre for Disease Prevention and Control
EFSA	European Food Safety Authority
EFTA	European Free Trade Association
EQA	External quality assessment
EU	European Union
EURL	European Union Reference Laboratory
FWDB	Food- and Water-borne Disease Bacteria
ILS	Interlaboratory study
ISO	International Organization for Standardization
ISO/TC 34/SC 9	International Organization for Standardization, Technical Committee 34 on Food Products, Subcommittee 9 – Microbiology of the food chain
LOD_{50}	Level of detection at which 50% of tests give a positive result
LPS	Lipopolysaccharide
MCS	Method comparison study
MKTTn	Muller-Kauffmann tetrathionate-novobiocin (broth)
MS	Member State
MSRV	Modified semi-solid Rappaport-Vassiliadis (agar)
NGS	Next-generation sequencing
NRL	National Reference Laboratory
OCL	Official control laboratory
PCR	Polymerase chain reaction
PH	Public health
PPS	Primary production stage
PT	Proficiency test
Q	Question
RIVM	Dutch National Institute for Public Health and the Environment
RVS	Rappaport-Vassiliadis with soya (broth)
SE	*Salmonella* Enteritidis
ST	Sequence type
STm	*Salmonella* Typhimurium
SV	*Salmonella* Virchow
TC	Technical committee
WG	Working group
WGS	Whole genome sequencing

Appendix 1 Participants

EC DG SANTE

Kris de Smet

European Food Safety Authority (EFSA)

Frank Boelaert

EURL-*Salmonella* (and NRL-*Salmonella* the Netherlands)

Robin Diddens
Niels van der Draaij
Wilma Jacobs-Reitsma
Kirsten Mooijman
Irene Pol-Hofstad
Wendy van Overbeek
Noël Peters
Anjo Verbruggen
Linda Visser
Kim van der Zwaluw

National Reference Laboratories for *Salmonella*

ALBANIA
Renis Maçi

AUSTRIA
Elisabeth Brugger-Schiefermueller
Thomas Pölzler
Anika Weitmann

BELGIUM
Maria Cristina Garcia Graells
Inge van Damme (Northern Ireland representative)

BOSNIA AND HERZEGOVINA
Amira Koro-Spahic

BULGARIA
Gergana Mateva

CROATIA
Biljana Jecmenica
Dora Tomaskovic

CYPRUS
Eleni Papageorgiou

CZECH REPUBLIC
Tomás Cerný

DENMARK
Tina Beck Hansen
Lisa Bonnichsen

ESTONIA
Moonika Musting

FINLAND
Tiina Autio
Satu Hakola
Henry Kuronen

FRANCE
Laetitia Bonifait

GERMANY
Jennie Fischer (guest speaker)
Marina Lamparter
Istvan Szabo

GREECE
Nikki Mouttotou
Xanthi Skampardoni
Aphrodite Smpiraki
Eleni Valkanou

HUNGARY
Erzsébet Adrián

ICELAND
Pall Steinthorsson

IRELAND
William Byrne

ITALY
Lisa Barco
Laura Bortolami

KOSOVO
Besart Jashari

LATVIA
Madara Streikisa

LITHUANIA
Tatjana Kutyriova

LUXEMBOURG
Lena De Baets

MALTA
Renato Zerafa

NETHERLANDS
Roan Pijnacker (guest speaker)
Annet Heuvelink (guest speaker)

NORWAY
Simen Nørstebø
Julia Storesund

POLAND
Elzbieta Mackiw
Magdalena Skarzynska

PORTUGAL
Maria Barahona
Miguel Grilo
Hugo Guedes
Patricia Themudo

REPUBLIC OF MOLDOVA
Margarita Dociu

REPUBLIC OF NORTH MACEDONIA
Mirko Prodanov

ROMANIA
Veronica Ciupescu
Luminita Moica Vanghele

SERBIA
Dalibor Todorovic

SLOVAK REPUBLIC
Andrea Mojzisova

SLOVENIA
Jasna Micunovic
Tina Pirs

SPAIN
Tania Borrajo Rodriguez
Cristina de Frutos
Irene Suárez Fernández
Alexandra Herrera Estévez
Iria Uhía Castro

SWEDEN
Jenny Eriksson
Erik Eriksson
Madeleine Moazzami
Bo Segerman (guest speaker)
Hanna Skarin (guest speaker)

SWITZERLAND
Ezgi Akdesir

Appendix 2 Programme of the 31st EURL-Salmonella workshop; 12 and 13 May 2026, Zaandam, the Netherlands; Hybrid meeting

Tuesday 12 May 2026

09:00-09:30	Opening and introduction	Kirsten Mooijman, EURL-*Salmonella*
09:30-10:00	Reporting on *Salmonella* in animals and food in the European Union	Frank Boelaert, EFSA (*online*)
10:00-10:30	Amendment of Regulation (EU) 2017/625 in relation to laboratories.	Kris De Smet, EC DG SANTE
10:30-11:00	*Group picture - Coffee/tea break*	
11:00-11:30	Results EURL-*Salmonella* PT PPS 2025 – Detection of *Salmonella* in chicken faeces	Robin Diddens, EURL-*Salmonella*
11:30-12:00	Preliminary results EURL-*Salmonella* PT Food 2026 – Detection of *Salmonella* in canned tomatoes	Robin Diddens, EURL-*Salmonella*
12:00-12:30	Results EURL-*Salmonella* Proficiency Test Serotyping 2025	Wilma Jacobs, EURL-*Salmonella*
12:30–13:30	*Lunch break*	
13:30-14:00	Ongoing increase in autochthonous *Salmonella* Enteritidis infections in the Netherlands	Roan Pijnacker, RIVM, the Netherlands (*online*)
14:00-14:30	*Salmonella* in wild boar meat in Sweden	Madeleine Moazzami, Sweden
14:30-15:00	WGS-based geno-serotyping of LPS-deficient *Salmonella* and polyphyletic serovars and their impact on European *Salmonella* control programs	Jennie Fischer, Germany
15:00-15:30	*Coffee/tea break*	
15:30-17:00	Break-out session in 3 groups (not online) Approx. 45 min discussion on alternative methods for *Salmonella* serotyping and interpretation of results; Followed by approx. 30 min summary reports by each break-out group (approx. 10 min/group)	
18:30 - ….	*Dinner at Inntel hotel Zaandam*	

Wednesday 13 May 2026

09:00-09:40	Inter EURLs WG NGS Guidelines for the validation of Whole Genome Sequencing for accreditation & Experiences of the EURL-*Campylobacter*	Hanna Skarin & Bo Segerman EURL-*Campylobacter (online)*
09:40-10:10	EURL Public Health Food and water-borne bacteria	Linda Visser, RIVM, the Netherlands
10:10-10:30	The critical role of pre-enrichment timing on *Salmonella* detection.	Laetitia Bonifait,
10:30-11:00	*Coffee/tea break*	
11:00-11:25	Activities NRL-*Salmonella* Kosovo	Besart Jashari
11:25-11:50	Activities NRLs-*Salmonella* Spain	Alexandra Herrera Estévez, NRL-PPS *(online)* & Iria Uhia Castro, NRL-Food (onsite)
11:50-12:15	Do we need an international standard method for detection of *Salmonella* Gallinarum in poultry primary production?	Annet Heuvelink Royal GD, the Netherlands (*online*)
12:15-12:45	Activities EURL-*Salmonella* 2026-2027; Discussion on general items; Closure	Kirsten Mooijman, EURL-*Salmonella*
12:45-13:45	*Lunch break*	

---------- End workshop----------

Appendix 3 Workshop evaluation forms

Annex 3.1 Evaluation of the 31st EURL-Salmonella workshop, 12 and 13 May 2026 – onsite participants in Zaandam

We would highly appreciate if you could give us your opinion on the 31st EURL-*Salmonella* workshop, organised as a hybrid meeting in Zaandam, the Netherlands on 12 and 13 May 2026. Thank you very much in advance for completing the questionnaire by 1 June 2026 at the latest.

1. What is your opinion on the information given in advance of the workshop?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

2. What is your opinion on the booking of the tickets by EURL-*Salmonella* (if relevant)?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

3. What is your opinion on how easy (high score) or difficult (low score) it was to reach the meeting venue?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

4. What is your opinion of the hotel room?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

5. What is your general opinion of the meeting room?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

6. What is your opinion on the readability of the presentations on the screen?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

7. What is your opinion on the technical equipment in the meeting room (computer, screen, microphones, etc.)?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

8. What is your opinion on organising this workshop as hybrid meeting?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

9. What is your opinion on the catering provided during the workshop (coffee, tea, lunch, dinner)?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

10. What is your opinion on the scientific programme of the workshop?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

11. What is your opinion on the break-out session on the first day of the workshop?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

12. Are there specific presentations you want to comment on, or did you miss information on certain subjects?

13. What is your general opinion of the workshop?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

14. Do you have any remarks or suggestions that we can use for future workshops?

Annex 3.2 Evaluation of the 31st EURL-Salmonella workshop, 12 and 13 May 2026 – online participants

We would highly appreciate if you could give us your opinion on the 31st EURL-*Salmonella* workshop, organised as a hybrid meeting in Zaandam, the Netherlands on 12 and 13 May 2026. Thank you very much in advance for completing the questionnaire by 1 June 2026 at the latest.

1. What is your opinion on the information given in advance of the workshop?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

2. What is your opinion on the ease of logging into the meeting?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

3. What is your opinion on organising this workshop as hybrid meeting?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

4. Did you face any technical problems during the meeting?
   - No
   - Yes, I encountered the following problems: _____

Remarks:_____

5. Were you satisfied with the options for raising questions during the meeting (chat function; discussion time at the end of a presentation and at the end of a session)?
   - Yes
   - No opinion
   - No, but I have a suggestion for improvement _____

Remarks:_____

6. What is your opinion on the scientific programme of the workshop?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

7. Are there specific presentations you want to comment on, or did you miss information on certain subjects?

8. What is your general opinion of the workshop?

1 (Very poor)	2 (poor)	3 (fair)	4 (good)	5 (very good)	No opinion

Remarks:_____

9. Do you have any remarks or suggestions that we can use for future workshops?

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