

# **COST Action Final Achievement Report (04/03/2019 to 03/09/2023)**

## **CA18105: Risk-based meat inspection and integrated meat safety assurance**

The Action was approved by the Committee of Senior Officials (CSO) on 13-11-2018 and has the MoU reference COST 086/18.

This report was submitted on 13-09-2023 by the Action Chair on behalf of the Management Committee in fulfilment of the requirements of the rules for COST Action Management, Monitoring and Final Assessment.

**COST Association AISBL**

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## Action leadership and participants

### Leadership positions

Position	Name	Contact details	Country*
Chair	Prof Bojan Blagojevic	blagojevic.bojan@yahoo.com +381214853350	Serbia

Position	Name	Contact details	Country*
Vice Chair	Dr Lis Alban	lia@lf.dk +4533394973	Denmark

### Working groups

#	WG Title	# of participants	WG Leader	Country*
1	Scope and targets of meat safety assurance	32	Prof Ivar Vågsholm ivar.vagsholm@slu.se	Sweden
2	Farm-level controls and risk categorisation of farms	28	Prof Diana Meemken diana.meemken@fu-berlin.de	Germany
3	Abattoir level controls and risk categorisation of abattoirs	39	Dr Dragan Antic Dragan.Antic@liverpool.ac.uk	United Kingdom
4	Impact of changes and alternatives to traditional meat inspection	27	Dr Ole Alvseike ole.alvseike@animalia.no	Norway
5	Meat safety assurance system training, communication and monitoring	26	Dr Sophia Johler sophia.johler@uzh.ch	Switzerland

### Other key leadership positions

Position	Name	Contact details	Country*
Science Communication Coordinator	Prof Boris Antunović	boris.antunovic@fazos.hr	Croatia
GH Scientific Representative	Prof Bojan Blagojevic	blagojevic.bojan@yahoo.com	Serbia

\* The country displayed is:

- for the Action Chair, the country that nominated that person to the Management Committee before they were elected Action Chair;
- for the Vice Chair the country that nominated the person as a Management Committee Member,
- for all other leadership positions, if the person is a MC Member the country displayed is the country of nomination, otherwise it is the country of the person's primary work affiliation.

## Participants

COST members having accepted the MoU

<b>AL</b>	21/01/2019	<b>AM</b>	09/01/2023	<b>AT</b>	25/02/2019	<b>BE</b>	28/01/2019	<b>BA</b>	31/05/2019
<b>BG</b>	29/03/2019	<b>HR</b>	05/12/2018	<b>CY</b>	02/11/2021	<b>CZ</b>	11/11/2019	<b>DK</b>	05/12/2018
<b>EE</b>	30/01/2019	<b>FI</b>	18/12/2018	<b>FR</b>	04/12/2018	<b>GE</b>	12/04/2022	<b>DE</b>	19/12/2018
<b>EL</b>	06/12/2018	<b>HU</b>	13/09/2021	<b>IS</b>	12/12/2019	<b>IE</b>	01/02/2019	<b>IL</b>	02/11/2021
<b>IT</b>	06/02/2019	<b>LV</b>	11/12/2018	<b>LT</b>	27/12/2018	<b>LU</b>	27/11/2019	<b>MT</b>	02/11/2021
<b>MD</b>	02/11/2021	<b>ME</b>	01/11/2019	<b>NL</b>	24/12/2018	<b>MK</b>	22/01/2019	<b>NO</b>	21/01/2019
<b>PL</b>	07/01/2019	<b>PT</b>	19/12/2018	<b>RO</b>	28/12/2018	<b>RS</b>	04/12/2018	<b>SK</b>	04/11/2019
<b>SI</b>	06/12/2018	<b>ZA</b>	02/11/2021	<b>ES</b>	24/01/2019	<b>SE</b>	01/02/2019	<b>CH</b>	05/12/2018
<b>TR</b>	18/01/2019	<b>UA</b>	12/04/2022	<b>UK</b>	04/12/2018				

## Other participants

Institution Name	Country
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## Summary

### Main aim/ objective

combine and strengthen European-wide research efforts on modern meat safety control systems

### The Action addressed this as described below

A network of more than 270 participants coming from 43, mostly European, countries who are experts in the field of risk-based meat inspection and meat safety assurance has been created. The participants who represent academia, competent authorities or food business operators are/were members of at least one of the five Working Groups (WGs): WG1 on scope and targets of meat safety assurance, WG2 on farm-level controls and risk categorisation of farms, WG3 on abattoir level controls and risk categorisation of abattoirs, WG4 on impact of changes and alternatives to traditional meat inspection, and WG5 on meat safety assurance system training, communication and monitoring. A crude roadmap that includes identification of current status, resources, responsibilities and objectives of risk-based meat inspection and meat safety assurance has been created. Knowledge and data gaps as well as directions of further research have been identified. Details of the specific achievements of the WGs are provided in their deliverables, scientific papers and other publications outlined in this report that serve in communication with stakeholders at national, European and worldwide levels. Organisation of WG meetings, Workshops, Conferences and Training Schools within this Action enabled dissemination and exploitation of the achievements on development and implementation of the modern meat safety assurance systems, as well as exchange of opinions on related challenges and opportunities. A platform for training of future participants of the new meat safety assurance system has been developed and young researchers and participants in the new system were trained. The Action has been promoted to non-European researchers in the field of meat safety assurance as well as to representatives of competent authorities and meat industry from overseas countries that intensively trade meat with Europe. Collaborative interdisciplinary approaches to achieve breakthroughs in meat safety has been promoted. The Action has been important for all researches to create and expand their professional networks, but particularly valuable for researches who were at the beginning of their carriers. Stakeholders were regularly approached and informed about the progress of the Action. The Action produced over thirty publications in high-calibre scientific journals. Establishment of an active network of researchers and representatives of competent authorities and meat industry will enable to continue work on joint scientific and educational publications as well as on research projects aiming modernisation of meat safety assurance systems in Europe and beyond.

### Action website

<http://ribmins.com>

## Achievement of MoU objectives, deliverables and additional outputs/ achievements

### MoU objectives

The Action reported the following achievement of its specific objectives.

MoU objective	Level of achievement	Further information (hyperlink or other)
To create a network to coordinate research on the risk-based meat inspection and the whole meat safety assurance system in Europe.	76 - 100%	A network of more than 270 experts on the field of risk-based meat inspection and meat safety assurance who are coming from 43 countries (36 COST Full Member countries) has been created. They are/were participants of at least one of the five WGs ( <a href="https://ribmins.com/about/working-groups/">https://ribmins.com/about/working-groups/</a> ). Coordination of research and training in the topic was done at overall level and at five specific sub-levels (i.e. scope of meat safety assurance, farm-level controls, abattoir-level controls, impact of changes and alternatives to the traditional system, training in meat safety assurance system).
To establish strong, dynamic and effective links between science, official authorities and meat industry (including primary meat production) in this field.	76 - 100%	Participants in the Action are/were representing academia/research, competent authorities (CAs) and food business operators (FBOs). In each of the five Working Groups, participants from research organizations were in majority, but each WG had members that were coming from official authorities (public health and/or food safety authorities, meat inspectors) and meat industry or had experience working in these two sectors. This enabled that each topic elaborated in WGs has been seen from the three, often different perspectives, which finally means that objective and practically feasible solutions of the identified challenges can be identified and proposed. One of the latest Action's activities was organisation of RIBMINS stakeholder meeting in April 2023 when representatives of the EU Commission, veterinary public health authorities from ten European countries, several biggest European meat industries and their associations, as well as other relevant food safety organisations in Europe met to discuss main challenges in implementation of risk-based meat safety assurance system in Europe ( <a href="https://ribmins.com/ribmins-stakeholder-meeting-safer-meat-in-a-changing-world/">https://ribmins.com/ribmins-stakeholder-meeting-safer-meat-in-a-changing-world/</a> ).
To develop a crude roadmap that will identify current status, multiple objectives and desired goals of meat inspection and meat safety assurance, including all in between steps, resources and responsibilities needed to achieve these goals.	76 - 100%	A crude roadmap was developed at the beginning of the Action. It is summarized in a paper published by the Core Group members of the Action ("Drivers, opportunities, and challenges of the European risk-based meat safety assurance system"; <a href="https://www.sciencedirect.com/science/article/pii/S0956713521000086">https://www.sciencedirect.com/science/article/pii/S0956713521000086</a> ). Details are provided in the Deliverables ( <a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a> ): WG1 Deliverable (Report on scope of meat safety assurance system and competences and roles of risk manager), WG2 Deliverables (Report on pre-harvest meat safety interventions and Food Chain Information assessment and improvements and Report on the use of harmonized epidemiological indicators for specific hazards in farm risk categorisation), WG3 Deliverables (Report on methods and tools for the detection of carcass contamination and decontamination of animal skins and carcasses in abattoirs and Report on harmonized epidemiological indicators in abattoir risk categorisation and integrated food safety management systems), WG4 Deliverables (Report on alternatives to traditional meat inspection and their potential in the future meat safety assurance system and Report on implementation of risk based meat inspection and meat safety assurance system), and WG5 Deliverable (Manual for training of participants in future meat safety assurance system).
To identify knowledge gaps and establish a consensus roadmap to foster excellence and innovative	76 - 100%	Several areas of significant knowledge gaps are identified through this Action and consensus roadmap has been established to foster further research in the topic of modernization of the traditional meat safety system. Details are presented in the Deliverables ( <a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a> ) and papers published in refereed scientific journals ( <a href="https://ribmins.com/reports-">https://ribmins.com/reports-</a>

scientific research.		publications/).
To consolidate and extend the results from national research programmes and other international networking activities.	76 - 100%	Numerous studies on the topic of the Action were/are performed in different European countries that are part of RIBMINS network. Also, various meat safety control programmes are applied in different countries and/or meat producing companies. Therefore, at the begging of this Action, a network of National Contract Points (i.e. contact point in each participating European country; NCPs) was created to serve to liaise with country level stakeholders and collect local data, usually through questionnaires, and forward them to WG members in charge of specific research topic. Full details of the questionnaires and national level results obtained are given in WG2, WG3 and WG4 Deliverables ( <a href="https://ribmins.com/reservedarea/">https://ribmins.com/reservedarea/</a> ) as well as in several scientific papers (e.g. "Challenges and opportunities in the implementation of new meat inspection systems in Europe", "Differences in code terminology and frequency of findings in meat inspection of finishing pigs in seven European countries", "A European survey on post-mortem inspection of finishing pigs: Total condemnation criteria to declare meat unfit for human consumption", "Additional post-mortem inspection procedures and laboratory methods as supplements for visual meat inspection of finishing pigs in Europe—Use and variability", "Risk categorisation of abattoirs in Europe: Current state of play", "Food chain information for broilers: Results of a Europe-wide survey on status quo, usability and suggestions for improvement", "Official veterinarians in Europe: Questionnaire-based insights into demographics, work and training", etc.; details on all papers are presented here: <a href="https://ribmins.com/reports-publications/">https://ribmins.com/reports-publications/</a> ).
To harmonise and integrate research outputs and develop new methods and tools for cost-effective meat safety assurance.	76 - 100%	Numerous studies and reviews were performed in each of the five Working Groups with an aim of harmonization and integration of available research outputs that are already in place and will pose a basis of further development of effective meat safety assurance systems. Examples of the studies/reviews include systematic reviews on abattoir level detection of contamination and pathological lesions and meta-analysis on available interventions in pork, beef and poultry abattoirs as well as on mapping the meat inspection code system and the associated condemnation criteria in force, and in several scientific papers (e.g. "Differences in terminology and frequency of findings in meat inspection of finishing pigs in seven European countries", "A European survey on post-mortem inspection of finishing pigs: Total condemnation criteria to declare meat unfit for human consumption", "Systematic Review and Meta-Analysis of the Efficacy of Interventions Applied during Primary Processing to Reduce Microbial Contamination on Pig Carcasses", "Risk categorisation of abattoirs in Europe: Current state of play", "Mapping ways of detecting and handling antimicrobial residues in pigs and pig meat in- and outside Europe", etc.).
To assess impacts of the new meat safety assurance system on public health, animal health and welfare, socio-economics, and trade.	76 - 100%	Impacts, including risks, costs and benefits of the new meat safety assurance systems on public health, animal health and welfare, socio-economics, and trade are assessed through strengths, weaknesses, opportunities and threats (SWOT) analyses (details presented in the WG1 and WG4 Deliverables). Also, SWOT-like analysis of the old and new meat inspection systems in place in most of the European countries is presented in scientific paper entitled as "Challenges and opportunities in the implementation of new meat inspection systems in Europe".
To provide scientific advice/information/recommendations and engage with policy-makers at national and European levels and meat industry to receive their feedback on possible challenges and opportunities related to meat safety	76 - 100%	Each of the five RIBMINS Working Groups was/is mainly composed of researchers but open for representatives from competent authorities and food business operators. Therefore, their representatives were/are members of each WG. Scientific advice and recommendations are essential for policy makers and food industry while feedback of national and EU level policy makers and meat industry representatives to scientific community is crucial for development and implementation of successful meat safety assurance system. Therefore, representatives of competent authorities and food business operators were invited and they participated in several large events organized including RIBMINS Workshop in Copenhagen in November 2019 ( <a href="https://ribmins.com/ribmins-workshops-and-working-group-meetings/">https://ribmins.com/ribmins-workshops-and-working-group-meetings/</a> ), online RIBMINS conference in October 2020 ( <a href="https://ribmins.com/ribmins-">https://ribmins.com/ribmins-</a>

assurance system.		<p>conferenceand-mc-meeting-online/), RIBMINS conference in April 2022 in Cordoba (<a href="https://ribmins.com/2nd-ribmins-scientific-conference/">https://ribmins.com/2nd-ribmins-scientific-conference/</a>) and final RIBMINS conference in March 2023 in Bucharest (<a href="https://ribmins.com/3rd-ribmins-scientific-conference-shaping-the-future-of-rb-msas/">https://ribmins.com/3rd-ribmins-scientific-conference-shaping-the-future-of-rb-msas/</a>). Also, significant part of both trainers and trainees engaged to three online Training Schools, held in February 2021 (<a href="https://ribmins.com/training-school-on-future-meat-safety/">https://ribmins.com/training-school-on-future-meat-safety/</a>), June 2022 (<a href="https://ribmins.com/training-school-on-farm-and-abattoir-interventions/">https://ribmins.com/training-school-on-farm-and-abattoir-interventions/</a>) and June 2023 (<a href="https://ribmins.com/training-school-on-rb-msas-focusing-on-risk-categorisation-of-farms-and-abattoirs-2/">https://ribmins.com/training-school-on-rb-msas-focusing-on-risk-categorisation-of-farms-and-abattoirs-2/</a>), were coming from these two sectors. Furthermore, general public and stakeholders were informed on RIBMINS achievements and events through its website and newsletters (<a href="https://ribmins.com/newsletters/">https://ribmins.com/newsletters/</a>). Also, network of National Contact Points (NCPs) served to inform competent authorities and other interested parties in each country about RIBMINS achievements in developments of the risk-based meat safety assurance systems in Europe. Finally, during RIBMINS stakeholder meeting held in April 2023 in Brussels, representatives of the EU Commission, veterinary public health authorities from ten European countries, several biggest European meat industries and their associations, as well as other relevant food safety organisations in Europe met to discuss main challenges in implementation of risk-based meat safety assurance system in Europe (<a href="https://ribmins.com/ribmins-stakeholder-meeting-safer-meat-in-a-changing-world/">https://ribmins.com/ribmins-stakeholder-meeting-safer-meat-in-a-changing-world/</a>).</p>
To develop a platform for training of all participants in the new meat safety assurance system.	76 - 100%	<p>A platform for training of future participants of the new meat safety assurance system (particularly current Young Researchers and Innovators) has been developed and presented as WG5 Deliverable (<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>). It is based on material from three online Training Schools (<a href="https://ribmins.com/category/training-schools/">https://ribmins.com/category/training-schools/</a>), Deliverables of Working Groups 1-4 (<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>) and published papers in refereed scientific journals (<a href="https://ribmins.com/reports-publications/">https://ribmins.com/reports-publications/</a>). This platform will particularly be useful for future official veterinarians and other risk managers who are expected to take pivotal roles in future meat safety assurance system as described in papers entitled as "Risk based meat safety assurance system – An introduction to key concepts for future training of official veterinarians" and "Official veterinarians in Europe: Questionnaire-based insights into demographics, work and training".</p>
To promote European risk-based meat inspection and meat safety assurance system to other world regions, especially to overseas countries with the most intensive meat trade with Europe.	76 - 100%	<p>RIBMINS has been promoted to non-European researchers in the field of meat safety assurance as well as to representatives of CAs and FBOs from overseas countries that intensively trade meat with Europe (such as USA, New Zealand, Australia, Brazil), but also to some African and Asian countries, on several occasions including: RIBMINS workshop at the 13th SafePork held in Berlin in August 2019 (<a href="https://ribmins.com/ribmins-workshop-at-safepork-2019/">https://ribmins.com/ribmins-workshop-at-safepork-2019/</a> and <a href="https://www.safeporkconference.com/Workshops.981.0.html">https://www.safeporkconference.com/Workshops.981.0.html</a>), RIBMINS workshop at the 14th SafePork held in New Orleans (USA) in May 2023 (<a href="https://ribmins.com/ribmins-at-safepork-2023/">https://ribmins.com/ribmins-at-safepork-2023/</a> and <a href="https://www.regcytes.extension.iastate.edu/safepork/">https://www.regcytes.extension.iastate.edu/safepork/</a>), online scientific conference held in October 2020 (<a href="https://ribmins.com/ribminsconference-and-mc-meeting-online/">https://ribmins.com/ribminsconference-and-mc-meeting-online/</a>), as well as hybrid conference held in Cordoba in April 2022 (<a href="https://ribmins.com/2nd-ribmins-scientific-conference/">https://ribmins.com/2nd-ribmins-scientific-conference/</a>) and hybrid conference held in Bucharest in March 2023 (<a href="https://ribmins.com/3rd-ribmins-scientific-conference-shaping-the-future-of-rb-msas/">https://ribmins.com/3rd-ribmins-scientific-conference-shaping-the-future-of-rb-msas/</a>), and three online Training Schools (<a href="https://ribmins.com/category/training-schools/">https://ribmins.com/category/training-schools/</a>). Also, RIBMINS was further promoted via Newsletters (<a href="https://ribmins.com/newsletters/">https://ribmins.com/newsletters/</a>) that were sent to stakeholders in overseas countries, as well as through Twitter and its LinkedIn and Research-gate pages.</p>
To create a collaborative network of experts who will drive scientific progress in veterinary public health focused	76 - 100%	<p>The network consisting of more than 270 experts (from 43 countries), coming from academia, CA and FBOs and all working within veterinary public health or food safety, has been created. It is expected that the network will remain after the end of the Action to drive scientific progress, including development and implementation of risk-based meat safety assurance systems.</p>



on meat safety.		
To foster connection and collaboration of different actors involved in the new meat safety systems.	76 - 100%	Academia, competent authority and meat industry representatives were invited to RIBMINS events ( <a href="https://ribmins.com/meetings-events/">https://ribmins.com/meetings-events/</a> ), particularly online events, and each of the three sectors participated in the WG1-5 activities. This enabled their collaboration on a field of meat safety assurance.
To promote collaborative interdisciplinary approaches to achieve breakthroughs in meat safety (i.e. between food microbiologists, parasitologists, veterinary and public health epidemiologists, food technologists and engineers, etc.).	76 - 100%	As the complexity of risk-based meat safety assurance system requires a multidisciplinary approach in developing and implementing the systems in practice, the RIBMINS participants' different backgrounds (i.e. microbiology, parasitology, epidemiology, meat technology) and work perspectives (academia, authorities, industry) were valuable for setting basis and development of functional meat safety assurance systems. These connections will continue to be valued even after the Action is finished, including for slightly different research topics.
To identify the competency profile of food risk managers and suggest suitable training.	76 - 100%	The works of WG1 and WG5 were focused on identification of competency profile of the risk managers in the new meat safety assurance systems. Details of the profiles identified are presented in the WG1 Deliverable (Report on scope of meat safety assurance system and competences and roles of risk manager; <a href="https://ribmins.com/reservedarea/">https://ribmins.com/reservedarea/</a> ). Competency profile and suitable training are proposed by WG5 in their Deliverable (Manual for training of participants in future meat safety assurance system; <a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a> ) and scientific papers entitled as "Risk based meat safety assurance system – An introduction to key concepts for future training of official veterinarians" and "Official veterinarians in Europe: Questionnaire-based insights into demographics, work and training". Other Working Groups also contributed to elaboration of specific knowledge in their competency profiles (i.e. WG2 - farm-level controls, WG3 - abattoir-level controls, WG4 - impact of changes from traditional to modern system), while WG5 synthesize all the competences needed to suggest proper training of the future risk managers.
To train young researchers (PhD students and other Early Career Investigators), representatives of national food safety and veterinary public health authorities and representatives of meat industry in the new meat safety assurance system.	76 - 100%	Three Training Schools ( <a href="https://ribmins.com/category/training-schools/">https://ribmins.com/category/training-schools/</a> ), namely on Future meat safety, Farm and abattoir interventions, and Risk-based meat safety assurance systems focusing on risk categorisation of farms and abattoirs, were held online in February 2021, June 2022 and June 2023, respectively. Each virtual Training School hosted more than 50 trainees coming from most of the European and from some overseas countries. The selection process of trainees prioritized young researches, and employees of the national CA or FBOs. Also, 20 Short Term Scientific Missions (STSMs) have been conducted with the purpose of training of researchers in new skills related to meat safety assurance systems ( <a href="https://ribmins.com/open-calls/stsms/">https://ribmins.com/open-calls/stsms/</a> ).



## Deliverables

The Action reported the following deliverables:

Deliverable	Timing of deliverable	Further information (hyperlink or other)
Report on pre-harvest meat safety interventions and Food Chain Information assessment and improvements.	Delivered	<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>
Preliminary report on scope of meat safety assurance system and competences and roles of risk manager.	Delivered	<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>
Report on methods and tools for the detection of carcass contamination and decontamination of animal skins and carcasses in abattoirs.	Delivered	<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>
Report on alternatives to traditional meat inspection and their potential in the future meat safety assurance system.	Delivered	<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>
Draft manual for training of participants in future meat safety assurance system.	Delivered	<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>
Final report on scope of meat safety assurance system and competences and roles of risk manager.	Delivered	<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>
Report on the use of harmonized epidemiological indicators for specific hazards in farm risk categorisation.	Delivered	<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>
Report on harmonized epidemiological indicators in abattoir risk categorisation and integrated food safety management systems.	Delivered	<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>
Report on implementation of risk based meat inspection and meat safety assurance system.	Delivered	<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>
Final manual for training of participants in future meat safety assurance system.	Delivered	<a href="https://ribmins.com/reserved-area/">https://ribmins.com/reserved-area/</a>

## Additional outputs/ achievements

The following outputs/ achievements also resulted from the Action:

The Action reported 32 publications on the topic of the Action, co-authored by at least two Action participants from two countries participating in the Action, and for which the Action networking was necessary.

### Co-authored Action publications - peer-reviewed

1. [doi:10.1016/j.foodcont.2021.107870](https://doi.org/10.1016/j.foodcont.2021.107870)

Title	Drivers, opportunities, and challenges of the European risk-based meat safety assurance system
Authors	<a href="#">Bojan Blagojevic</a> ; Truls Nesbakken; Ole Alvseike; Ivar Vågsholm; Dragan Antic; Sophia Johler; Kurt Houf; <a href="#">Diana Meemken</a> ; Ivan Nastasijevic; Madalena Vieira Pinto; Boris Antunovic; Milen Georgiev; Lis Alban
DOI	<a href="https://doi.org/10.1016/j.foodcont.2021.107870">doi:10.1016/j.foodcont.2021.107870</a>
Type	Journal article
Published in	Food Control
Published by	Elsevier BV
ISSN	<a href="#">0956-7135</a>
Subjects	Biotechnology; Food Science
Links	<a href="https://api.elsevier.com/content/article/PII:S0956713521000086?httpAccept=text/xml">https://api.elsevier.com/content/article/PII:S0956713521000086?httpAccept=text/xml</a> ; <a href="https://api.elsevier.com/content/article/PII:S0956713521000086?httpAccept=text/plain">https://api.elsevier.com/content/article/PII:S0956713521000086?httpAccept=text/plain</a>

2. [doi:10.1111/jfs.12819](https://doi.org/10.1111/jfs.12819)

Title	The European Union control strategy for Campylobacter spp. in the broiler meat chain
Authors	<a href="#">Ivan Nastasijevic</a> ; Francesco Proscia; <a href="#">Marija Boskovic</a> ; Milica Glisic; Bojan Blagojevic; Simona Sorgentone; Andrej Kirbis; Maurizio Ferri
DOI	<a href="https://doi.org/10.1111/jfs.12819">doi:10.1111/jfs.12819</a>
Type	Journal article
Published in	Journal of Food Safety
Published by	Wiley
ISSNs	<a href="#">0149-6085</a> ; <a href="#">1745-4565</a>
Subjects	Food Science; Microbiology; Parasitology
Links	<a href="https://api.wiley.com/onlinelibrary/tdm/v1/articles/10.1111%2Fjfs.12819">https://api.wiley.com/onlinelibrary/tdm/v1/articles/10.1111%2Fjfs.12819</a> ; <a href="https://onlinelibrary.wiley.com/doi/pdf/10.1111/jfs.12819">https://onlinelibrary.wiley.com/doi/pdf/10.1111/jfs.12819</a> ; <a href="https://onlinelibrary.wiley.com/doi/full-xml/10.1111/jfs.12819">https://onlinelibrary.wiley.com/doi/full-xml/10.1111/jfs.12819</a>

3. [doi:10.1007/s40588-021-00161-z](https://doi.org/10.1007/s40588-021-00161-z)

Title	Assessment of the Effectiveness of Pre-harvest Meat Safety Interventions to Control Foodborne Pathogens in Broilers: a Systematic Review
Authors	Joana Pessoa; Maria Rodrigues da Costa; Truls Nesbakken; <a href="#">Diana Meemken</a>
DOI	<a href="https://doi.org/10.1007/s40588-021-00161-z">doi:10.1007/s40588-021-00161-z</a>
Type	Journal article
Published in	Current Clinical Microbiology Reports

Published by  
ISSN  
Links

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<http://link.springer.com/article/10.1007/s40588-021-00161-z/fulltext.html>

4. [doi:10.1016/j.foodcont.2023.110000](https://doi.org/10.1016/j.foodcont.2023.110000)

Title

Accidental delivery of pigs for slaughter prior to end of withdrawal period for antimicrobial treatment - Ways of handling

Authors

[Lis Alban](#); [Boris Antunovic](#); [Madalina Belous](#); [Aivars Bērziņš](#); Silvia Bonardi; [Rosa Maria García-Gimeno](#); [Ian Jenson](#); [Arja Helena Kautto](#); [Michał Majewski](#); Derk Oorburg; [Ioannis Sakaridis](#); [Alexandrina Sirbu](#); Madalena Vieira-Pinto; [Ivar Vågsholm](#); Jesper Valentin Petersen  
[doi:10.1016/j.foodcont.2023.110000](https://doi.org/10.1016/j.foodcont.2023.110000)

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5. [doi:10.1016/j.foodcont.2023.109899](https://doi.org/10.1016/j.foodcont.2023.109899)

Title

Mapping ways of detecting and handling antimicrobial residues in pigs and pig meat in- and outside Europe

Authors

[L. Alban](#); B. Antunović; M. Belous; S. Bonardi; R.M. García-Gimeno; I. Jenson; A.H. Kautto; M. Majewski; D. Oorburg; I. Sakaridis; A. Sirbu; M. Vieira-Pinto; I. Vågsholm; A. Bērziņš; J.V. Petersen

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6. [doi:10.1016/j.foodcont.2023.109954](https://doi.org/10.1016/j.foodcont.2023.109954)

Title

Implementation of harmonised epidemiological indicators (HEIs) for pigs – A Europe-wide online survey

Authors

[Ting-Ting Li](#); Susann Langforth; [Nina Langkabel](#); Smaragda Sotiraki; [Sofia Anastasiadou](#); Truls Nesbakken; [Diana Meemken](#)

DOI

[doi:10.1016/j.foodcont.2023.109954](https://doi.org/10.1016/j.foodcont.2023.109954)

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<https://api.elsevier.com/content/article/PII:S0956713523003547?httpAccept=text/plain>

7. [doi:10.1016/j.foodcont.2023.109844](https://doi.org/10.1016/j.foodcont.2023.109844)

Title

Food chain information for broilers: Results of a Europe-wide survey on status quo, usability and suggestions for improvement

Authors

[Susann Langforth](#); [Verena Oswaldi](#); Rudi Isbrandt; Smaragda Sotiraki; [Sofia Anastasiadou](#); Truls Nesbakken; [Diana Meemken](#); [Nina Langkabel](#)

DOI

[doi:10.1016/j.foodcont.2023.109844](https://doi.org/10.1016/j.foodcont.2023.109844)

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8. [doi:10.1016/j.foodcont.2023.109863](https://doi.org/10.1016/j.foodcont.2023.109863)

Title

Risk categorisation of abattoirs in Europe: Current state of play

Authors

Morgane Salines; [Thomai Lazou](#); Jose Gomez-Luengo; [Janne Holthe](#); [Ivan Nastasijevic](#); [Martijn Bouwknecht](#); [Nikolaos Dadios](#); [Kurt Houf](#); [Bojan Blagojevic](#); [Dragan Antic](#)

DOI

[doi:10.1016/j.foodcont.2023.109863](https://doi.org/10.1016/j.foodcont.2023.109863)

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9. [doi:10.1016/j.foodcont.2023.110020](https://doi.org/10.1016/j.foodcont.2023.110020)

Title

Use of harmonised epidemiological indicators (HEIs) for broilers in Europe

Authors

[Nina Langkabel](#); [Diana Meemken](#); [Ting-Ting Li](#); Smaragda Sotiraki; [Sofia Anastasiadou](#); Truls Nesbakken; Susann Langforth

DOI

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<https://api.elsevier.com/content/article/PII:S0956713523004206?httpAccept=text/plain>
10. [doi:10.3390/microorganisms9091825](https://doi.org/10.3390/microorganisms9091825)  
Title A Systematic Review on the Effectiveness of Pre-Harvest Meat Safety Interventions in Pig Herds to Control Salmonella and Other Foodborne Pathogens  
Authors [Maria Rodrigues da Costa](#); Joana Pessoa; [Diana Meemken](#); Truls Nesbakken  
DOI [doi:10.3390/microorganisms9091825](https://doi.org/10.3390/microorganisms9091825)  
Type Journal article  
Published in Microorganisms  
Published by MDPI AG  
ISSN [2076-2607](#)  
Subjects Virology; Microbiology (medical); Microbiology  
Link <https://www.mdpi.com/2076-2607/9/9/1825/pdf>
11. [doi:10.1016/j.foodcont.2021.108530](https://doi.org/10.1016/j.foodcont.2021.108530)  
Title Risk categorisation of poultry abattoirs on the basis of the current process hygiene criteria and indicator microorganisms  
Authors [Simo Cegar](#); Ljiljana Kuruca; [Bojana Vidovic](#); Dragan Antic; [Sigrun J. Hauge](#); Ole Alvseike; [Bojan Blagojevic](#)  
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12. [doi:10.1016/j.tifs.2021.10.030](https://doi.org/10.1016/j.tifs.2021.10.030)  
Title Food chain information in the European pork industry: Where are we?  
Authors [Silvia Bonardi](#); [Bojan Blagojevic](#); [Simone Belluco](#); Mati Roasto; Eduarda Gomes-Neves; Ivar Vågsholm  
DOI [doi:10.1016/j.tifs.2021.10.030](https://doi.org/10.1016/j.tifs.2021.10.030)  
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ISSN [0924-2244](#)  
Subjects Food Science; Biotechnology  
Links <https://api.elsevier.com/content/article/PII:S092424421005975?httpAccept=text/xml>;  
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13. [doi:10.3390/foods11101459](https://doi.org/10.3390/foods11101459)  
Title Prevalence and Persistence of Multidrug-Resistant *Yersinia enterocolitica* 4/O:3 in Tonsils of Slaughter Pigs from Different Housing Systems

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| <p>Authors</p><br><p>DOI</p> <p>Type</p> <p>Published in</p> <p>Published by</p> <p>ISSN</p> <p>Subjects</p><br><p>Link</p>  | <p>in Croatia</p> <p><a href="#">Nevijo Zdolec</a>; Marta Kiš; Dean Jankuloski; Katerina Blagoevska; <a href="#">Snježana Kazazić</a>; Marina Pavlak; Bojan Blagojević; <a href="#">Dragan Antić</a>; <a href="#">Maria Fredriksson-Ahomaa</a>; Valerij Pažin</p> <p><a href="https://doi.org/10.3390/foods11101459">doi:10.3390/foods11101459</a></p> <p>Journal article</p> <p>Foods</p> <p>MDPI AG</p> <p><a href="#">2304-8158</a></p> <p>Plant Science; Health Professions (miscellaneous); Health (social science); Microbiology; Food Science</p> <p><a href="https://www.mdpi.com/2304-8158/11/10/1459/pdf">https://www.mdpi.com/2304-8158/11/10/1459/pdf</a></p>  |
| <p>14. <a href="https://doi.org/10.1016/j.foodcont.2022.109160">doi:10.1016/j.foodcont.2022.109160</a></p> <p>Title</p><br><p>Authors</p><br><p>DOI</p> <p>Type</p> <p>Published in</p> <p>Published by</p> <p>ISSN</p> <p>Subjects</p> <p>Links</p> | <p>Meat safety legislation and its opportunities and hurdles for innovative approaches: A review</p> <p>Gunvor Elise Nagel-Alne; Emil Murphy; Brittany McCauslin; Sigrun J. Hauge; Dorte Lene Schrøder-Petersen; Janne Holthe; Ole Alvseike</p> <p><a href="https://doi.org/10.1016/j.foodcont.2022.109160">doi:10.1016/j.foodcont.2022.109160</a></p> <p>Journal article</p> <p>Food Control</p> <p>Elsevier BV</p> <p><a href="#">0956-7135</a></p> <p>Food Science; Biotechnology</p> <p><a href="https://api.elsevier.com/content/article/PII:S095671352200353X?httpAccept=text/xml">https://api.elsevier.com/content/article/PII:S095671352200353X?httpAccept=text/xml</a>;<br/><a href="https://api.elsevier.com/content/article/PII:S095671352200353X?httpAccept=text/plain">https://api.elsevier.com/content/article/PII:S095671352200353X?httpAccept=text/plain</a></p>   |
| <p>15. <a href="https://doi.org/10.1016/j.rvsc.2022.07.013">doi:10.1016/j.rvsc.2022.07.013</a></p> <p>Title</p><br><p>Authors</p><br><p>DOI</p> <p>Type</p> <p>Published in</p> <p>Published by</p> <p>ISSN</p> <p>Subject</p> <p>Links</p>          | <p>A European survey on post-mortem inspection of finishing pigs: Total condemnation criteria to declare meat unfit for human consumption</p> <p>Madalena Vieira-Pinto; Nina Langkabel; Susana Santos; Lis Alban; Jaime Gómez Laguna; Bojan Blagojevic; Diana Meemken; Silvia Bonardi; Boris Antunović; Sergio Ghidini; Patric Maurer; Ole Alvseike; Riikka Laukkanen-Ninios</p> <p><a href="https://doi.org/10.1016/j.rvsc.2022.07.013">doi:10.1016/j.rvsc.2022.07.013</a></p> <p>Journal article</p> <p>Research in Veterinary Science</p> <p>Elsevier BV</p> <p><a href="#">0034-5288</a></p> <p>General Veterinary</p> <p><a href="https://api.elsevier.com/content/article/PII:S0034528822002168?httpAccept=text/xml">https://api.elsevier.com/content/article/PII:S0034528822002168?httpAccept=text/xml</a>;<br/><a href="https://api.elsevier.com/content/article/PII:S0034528822002168?httpAccept=text/plain">https://api.elsevier.com/content/article/PII:S0034528822002168?httpAccept=text/plain</a></p> |
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| <p>Link</p>  | <p><a href="https://www.mdpi.com/2304-8158/11/14/2110/pdf">https://www.mdpi.com/2304-8158/11/14/2110/pdf</a></p>  |
| <p>17. <a href="https://doi.org/10.1007/s00003-022-01391-z">doi:10.1007/s00003-022-01391-z</a></p>         |   |
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| <p>Authors</p>   | <p><a href="#">Riikka Laukkanen-Ninios</a>; Sergio Ghidini; Jaime Gómez Laguna; Nina Langkabel; Susana Santos; Patric Maurer; Diana Meemken; Lis Alban; Ole Alvseike; Madalena Vieira-Pinto</p>   |
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| <p>18. <a href="https://doi.org/10.1016/j.foodcont.2022.109552">doi:10.1016/j.foodcont.2022.109552</a></p> |   |
| <p>Title</p>   | <p>Risk based meat safety assurance system – An introduction to key concepts for future training of official veterinarians</p>  |
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| <p>DOI</p> <p>Type</p> <p>Published in</p> <p>Published by</p> <p>ISSN</p> <p>Subjects</p>                 | <p><a href="https://doi.org/10.1016/j.foodcont.2022.109552">doi:10.1016/j.foodcont.2022.109552</a></p> <p>Journal article</p> <p>Food Control</p> <p>Elsevier BV</p> <p><a href="#">0956-7135</a></p> <p>Food Science; Biotechnology</p>  |
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| <p>19. <a href="https://doi.org/10.1016/j.foodcont.2022.109556">doi:10.1016/j.foodcont.2022.109556</a></p> |   |
| <p>Title</p>   | <p>Current control options and a way towards risk-based control of <i>Toxoplasma gondii</i> in the meat chain</p>   |
| <p>Authors</p>   | <p><a href="#">Ljiljana Kuruca</a>; <a href="#">Simone Belluco</a>; <a href="#">Madalena Vieira-</a></p>  |



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| <p>DOI<br/>Type<br/>Published in<br/>Published by<br/>ISSN<br/>Subjects<br/>Links</p>   | <p><a href="https://doi.org/10.1016/j.foodcont.2022.109556">Pinto; Dragan Antic; Bojan Blagojevic</a><br/><a href="https://doi.org/10.1016/j.foodcont.2022.109556">doi:10.1016/j.foodcont.2022.109556</a><br/>Journal article<br/>Food Control<br/>Elsevier BV<br/><a href="https://doi.org/10.1016/j.foodcont.2022.109556">0956-7135</a><br/>Food Science; Biotechnology<br/><a href="https://api.elsevier.com/content/article/PII:S0956713522007496?httpAccept=text/xml">https://api.elsevier.com/content/article/PII:S0956713522007496?httpAccept=text/xml</a>;<br/><a href="https://api.elsevier.com/content/article/PII:S0956713522007496?httpAccept=text/plain">https://api.elsevier.com/content/article/PII:S0956713522007496?httpAccept=text/plain</a></p>   |
| <p>20. <a href="https://doi.org/10.1016/j.tifs.2022.12.007">doi:10.1016/j.tifs.2022.12.007</a><br/>Title<br/><br/>Authors<br/><br/>DOI<br/>Type<br/>Published in<br/>Published by<br/>ISSN<br/>Subjects<br/>Links</p>         | <p>Salmonella enterica prevalence, serotype diversity, antimicrobial resistance and control in the European pork production chain<br/><a href="https://doi.org/10.1016/j.tifs.2022.12.007">Mati Roasto; Silvia Bonardi; Minkel Mäesaar</a>; Lis Alban; <a href="https://doi.org/10.1016/j.tifs.2022.12.007">Eduarda Gomes-Neves</a>; Madalena Vieira-Pinto; <a href="https://doi.org/10.1016/j.tifs.2022.12.007">Ivar Vågsholm</a>; <a href="https://doi.org/10.1016/j.tifs.2022.12.007">Terje Elias</a>; Lene Lund Lindegaard; <a href="https://doi.org/10.1016/j.tifs.2022.12.007">Bojan Blagojevic</a><br/><a href="https://doi.org/10.1016/j.tifs.2022.12.007">doi:10.1016/j.tifs.2022.12.007</a><br/>Journal article<br/>Trends in Food Science &amp; Technology<br/>Elsevier BV<br/><a href="https://doi.org/10.1016/j.tifs.2022.12.007">0924-2244</a><br/>Food Science; Biotechnology<br/><a href="https://api.elsevier.com/content/article/PII:S092424422004770?httpAccept=text/xml">https://api.elsevier.com/content/article/PII:S092424422004770?httpAccept=text/xml</a>;<br/><a href="https://api.elsevier.com/content/article/PII:S092424422004770?httpAccept=text/plain">https://api.elsevier.com/content/article/PII:S092424422004770?httpAccept=text/plain</a></p>  |
| <p>21. <a href="https://doi.org/10.1016/j.foodcont.2023.109768">doi:10.1016/j.foodcont.2023.109768</a><br/>Title<br/><br/>Authors<br/><br/>DOI<br/>Type<br/>Published in<br/>Published by<br/>ISSN<br/>Subjects<br/>Links</p> | <p>Applications of computer vision systems for meat safety assurance in abattoirs: A systematic review<br/>Marianne Sandberg; <a href="https://doi.org/10.1016/j.foodcont.2023.109768">Sergio Ghidini</a>; <a href="https://doi.org/10.1016/j.foodcont.2023.109768">Lis Alban</a>; Andrea Capobianco Dondona; <a href="https://doi.org/10.1016/j.foodcont.2023.109768">Bojan Blagojevic</a>; Martijn Bouwknecht; Len Lipman; <a href="https://doi.org/10.1016/j.foodcont.2023.109768">Jeppe Seidelin Dam</a>; <a href="https://doi.org/10.1016/j.foodcont.2023.109768">Ivan Nastasijevic</a>; <a href="https://doi.org/10.1016/j.foodcont.2023.109768">Dragan Antic</a><br/><a href="https://doi.org/10.1016/j.foodcont.2023.109768">doi:10.1016/j.foodcont.2023.109768</a><br/>Journal article<br/>Food Control<br/>Elsevier BV<br/><a href="https://doi.org/10.1016/j.foodcont.2023.109768">0956-7135</a><br/>Food Science; Biotechnology<br/><a href="https://api.elsevier.com/content/article/PII:S0956713523001688?httpAccept=text/xml">https://api.elsevier.com/content/article/PII:S0956713523001688?httpAccept=text/xml</a>;<br/><a href="https://api.elsevier.com/content/article/PII:S0956713523001688?httpAccept=text/plain">https://api.elsevier.com/content/article/PII:S0956713523001688?httpAccept=text/plain</a></p> |
| <p>22. <a href="https://doi.org/10.1016/j.foodcont.2023.109944">doi:10.1016/j.foodcont.2023.109944</a><br/>Title<br/><br/>Authors<br/><br/>DOI<br/>Type<br/>Published in</p>  | <p>A systematic review to assess the effectiveness of pre-harvest meat safety interventions to control foodborne pathogens in beef<br/><a href="https://doi.org/10.1016/j.foodcont.2023.109944">Maria Rodrigues da Costa</a>; <a href="https://doi.org/10.1016/j.foodcont.2023.109944">Joana Pessoa</a>; Truls Nesbakken; <a href="https://doi.org/10.1016/j.foodcont.2023.109944">Diana Meemken</a><br/><a href="https://doi.org/10.1016/j.foodcont.2023.109944">doi:10.1016/j.foodcont.2023.109944</a><br/>Journal article<br/>Food Control</p>  |

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23. [doi:10.1016/j.foodcont.2023.109946](https://doi.org/10.1016/j.foodcont.2023.109946)  
Title  
Bacteriological examination in place in five European countries to assess carcass fitness for consumption during meat inspection  
Authors  
[Riikka Laukkanen-Ninios](#); [Nina Langkabel](#); [Sergio Ghidini](#); [Mariel Pikkemaat](#); [Elisabeth G. Biesta-Peters](#); [Kees van der Ark](#); [Lis Alban](#)  
DOI  
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24. [doi:10.1016/j.foodcont.2023.109947](https://doi.org/10.1016/j.foodcont.2023.109947)  
Title  
Official veterinarians in Europe: Questionnaire-based insights into demographics, work and training  
Authors  
[Eduarda Gomes-Neves](#); [Margarida F. Cardoso](#); [Thomai Lazou](#); [Brigita Hengl](#); [Silvia Bonardi](#); [Bojan Blagojevic](#); [Claudia Guldiman](#); [Sophia Jöhler](#)  
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<https://api.elsevier.com/content/article/PII:S095671352300347X?httpAccept=text/plain>
25. [doi:10.1016/j.foodcont.2023.110016](https://doi.org/10.1016/j.foodcont.2023.110016)  
Title  
Health based animal and meat safety cooperative communities  
Authors  
[Ivar Vågsholm](#); [Simone Belluco](#); [Silvia Bonardi](#); [Fredrik Hansen](#); [Terje Elias](#); [Mati Roasto](#); [Eduarda Gomes-Neves](#); [Boris Antunovic](#); [Arja Helena Kautto](#); [Lis Alban](#); [Bojan Blagojevic](#)  
DOI  
[doi:10.1016/j.foodcont.2023.110016](https://doi.org/10.1016/j.foodcont.2023.110016)  
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<https://api.elsevier.com/content/article/PII:S0956713523004164?httpAccept=text/plain>
26. [doi:10.1016/j.tifs.2021.08.002](https://doi.org/10.1016/j.tifs.2021.08.002)  
Title Challenges and opportunities in the implementation of new meat inspection systems in Europe  
Authors Boris Antunović; Bojan Blagojević; Sophia Johler; Claudia Guldemann; Madalena Vieira-Pinto; Ivar Vågsholm; Diana Meemken; Ole Alvseike; Milen Georgiev; Lis Alban  
DOI [doi:10.1016/j.tifs.2021.08.002](https://doi.org/10.1016/j.tifs.2021.08.002)  
Type Journal article  
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Subjects Food Science; Biotechnology  
Links <https://api.elsevier.com/content/article/PII:S092424421004878?httpAccept=text/xml>;  
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27. [doi:10.1016/j.foodcont.2021.108394](https://doi.org/10.1016/j.foodcont.2021.108394)  
Title Differences in code terminology and frequency of findings in meat inspection of finishing pigs in seven European countries  
Authors [Lis Alban](#); [Madalena Vieira-Pinto](#); [Diana Meemken](#); [Patric Maurer](#); Sergio Ghidini; [Susana Santos](#); Jaime Gómez Laguna; [Riikka Laukkanen-Ninios](#); Ole Alvseike; Nina Langkabel  
DOI [doi:10.1016/j.foodcont.2021.108394](https://doi.org/10.1016/j.foodcont.2021.108394)  
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<https://api.elsevier.com/content/article/PII:S0956713521005326?httpAccept=text/plain>
28. [doi:10.1016/j.meatsci.2021.108622](https://doi.org/10.1016/j.meatsci.2021.108622)  
Title Beef abattoir interventions in a risk-based meat safety assurance system  
Authors Dragan Antic; Kurt Houf; Eleni Michalopoulou; Bojan Blagojevic  
DOI [doi:10.1016/j.meatsci.2021.108622](https://doi.org/10.1016/j.meatsci.2021.108622)  
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Subject Food Science  
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29. [doi:10.1016/j.foodcont.2023.110054](https://doi.org/10.1016/j.foodcont.2023.110054)

Title

Food chain information for broilers, pigs and bovines in Europe: Comparison of report forms and definitions of the relevant period for reporting treatments with veterinary medicinal products with withdrawal periods

Authors

[Ting-Ting Li](#); [Diana Meemken](#); [Boris Antunovic](#); Truls Nesbakken; Susann Langforth

DOI

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30. [doi:10.1016/j.foodcont.2023.110059](https://doi.org/10.1016/j.foodcont.2023.110059)

Title

A comparison of European surveillance programs for campylobacter in broilers

Authors

[Abbey Olsen](#); Silvia Bonardi; Lisa Barco; Marianne Sandberg; [Nina Langkabel](#); Mati Roasto; Michał Majewski; [Brigitte Brugger](#); [Arja H. Kautto](#); [Bojan Blagojevic](#); [Joao B. Cota](#); Gunvor Elise Nagel-Alne; [Adeline Huneau](#); Riikka Laukkanen-Ninios; Sophie Lebouquin-Leneveu; Ole Alvseike; [Maria Fredriksson-Ahomaa](#); Madalena Vieira-Pinto; [Eija Kaukonen](#)  
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31. [doi:10.1016/j.foodcont.2023.110071](https://doi.org/10.1016/j.foodcont.2023.110071)

Title

Withdrawal periods after treatment of pigs with oxytetracycline in- and outside the European Union

Authors

Daniel Hjorth Lund; Jesper Valentin Petersen; [Boris Antunovic](#); Madalina Belous; Silvia Bonardi; Rosa Maria García-Gimeno; [Ian Jenson](#); [Arja H. Kautto](#); [Michał Majewski](#); Derk Oorburg; [Ioannis Sakaridis](#); [Alexandrina Sirbu](#); [Madalena Vieira-Pinto](#); [Ivar Vågsholm](#); [Lis Alban](#)  
[doi:10.1016/j.foodcont.2023.110071](https://doi.org/10.1016/j.foodcont.2023.110071)

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<https://api.elsevier.com/content/article/PII:S0956713523004711?httpAccept=text/plain>

### Co-authored Action publications - other

1.

Alvseike O., Prieto M., Vieira-Pinto M., Laukkanen-Ninios R., Sandberg M., Ghidini S., Maurer P., Langkabel N., Meemken D., Gomez-Laguna J., Santos S., Blagojevic B., Alban L. (2021). Safe meat can be obtained in easier ways. *Fleischwirtschaft International* 2, 38-41.

### Projects

The Action reported 2 project(s) and 1 proposal(s) resulting from the Action networking.

Key details of the projects are shown below:

1. EyeAM! - Digital transformation of meat inspection  
(National)
2. TailScan - A system for the automated measuring of tail length and tail lesions of pigs at the slaughter line  
(Other EU - European Health and Digital Executive Agency (HaDEA))

### Other outputs / achievements

N/A

## Impacts

The Action reported the following impact(s):

Description of the impact, i.e. what will change, and for whom, as a result of what the Action achieved	Type of impact	Timing of impact
Ongoing research related to objectives of the Working Groups filled numerous knowledge and data gaps on specific segments of the new meat safety assurance system development and implementation.	<ul style="list-style-type: none"> <li>• Scientific / Technological</li> </ul>	Achieved
Young researchers and innovators participated in research activities carried out in the Working Groups as well as in training, meetings and dissemination activities - they will thus be promoted as the next generation of experts in the field of meat safety assurance.	<ul style="list-style-type: none"> <li>• Scientific / Technological</li> <li>• Societal</li> </ul>	Achieved
Development of scientific mini-networks in specific fields of meat safety assurance by favoring mobility of, especially younger, researchers (including STSMs) and meetings.	<ul style="list-style-type: none"> <li>• Scientific / Technological</li> <li>• Societal</li> </ul>	Achieved
Integration of existing research groups into large international consortia for research in the field of meat safety assurance, including applications for new projects funding.	<ul style="list-style-type: none"> <li>• Scientific / Technological</li> <li>• Economic</li> <li>• Societal</li> </ul>	Foreseen within two years
Enabling policy makers to identify the targets and measures for reduction of the public and animal hazards and improving their health.	<ul style="list-style-type: none"> <li>• Economic</li> <li>• Societal</li> </ul>	Foreseen two-to-five years
Development of innovative technologies to support meat inspection (such as imaging for detection of pathological lesions or meat contamination), to better exploit available information in the meat chain, and to improve hygiene during carcass dressing process.	<ul style="list-style-type: none"> <li>• Scientific / Technological</li> <li>• Economic</li> </ul>	Foreseen two-to-five years
Development of food safety risk assessment based criteria for carcass meat condemnation will lead to reduction of food waste.	<ul style="list-style-type: none"> <li>• Economic</li> </ul>	Foreseen two-to-five years

## Dissemination and exploitation of Action results

### Dissemination and exploitation approach of the Action

The Action's dissemination and exploitation approach as well as all activities undertaken to ensure dissemination and exploitation of Action results and the outcomes of these activities are described below.

Dissemination and exploitation were assured through the following: RIBMINS website (ribmins.com), newsletters (<https://ribmins.com/newsletters/>), Press releases after important events (e.g. <https://ribmins.com/wp-content/uploads/2021/02/Public-statement-Training-School.pdf> <https://ribmins.com/post-conference-press-release/> <https://ribmins.com/statement-to-the-stakeholders/> [https://www.alphagalileo.org/en-gb/Item-Display/ItemId/235033](https://www.alphagalileo.org/en-gb/Item-Display/ItemId/235033?returnurl=https://www.alphagalileo.org/en-gb/Item-Display/ItemId/235033) <https://www.cost.eu/ribmins-stakeholder-meeting/>), public statements translated to local languages and distributed at national level branch magazines or internet sites (e.g. <https://ipaper.ipapercms.dk/fsek/dvt/2019/dvt142019/?page=12> <https://www2.helsinki.fi/en/news/health-news/more-than-150-experts-from-different-parts-of-europe-working-together-to-improve-meat-inspection> <https://www.uvlf.sk/document/ca18105-public-statement-cost-action.pdf> <https://www.unsa.ba/en/node/3465> <https://www.animalia.no/no/kjott-egg/mattrygghet2/ribmins--risikobasert-kjottkontroll-og-system-for-trygg-kjottproduksjon/> <https://veterina.com.hr/?p=84618> <http://aivi.it/uploads/documenti/60498949.pdf>), presentations of the aims and results of the Action at scientific conferences (e.g. doi:10.1088/1755-1315/333/1/012013 doi: 10.1088/1755-1315/333/1/012014), social networks (LinkedIn, Researchgate, Twitter), interviews (e.g. <https://www.cost.eu/meat-safety-ribmins/>) and scientific papers (<https://ribmins.com/reports-publications/>).

### Dissemination meetings funded by the Action (possible only until 31st October 2021)

The Action did not fund any Dissemination Meetings

#### Other dissemination activities

The Action also undertook the following dissemination activities:

<b>Activity</b>	RIBMINS workshop at SafePork 2019 conference held in August 2019 in Berlin (Germany)
<b>Target</b>	More than 60 researchers, meat industry and governmental representatives interested in modernization of meat inspection and meat safety assurance system.
<b>Outcome</b>	Eleven lectures were given to the participants of the workshop. This was followed by a panel discussion with questions from the audience.
<b>Link</b>	<a href="https://www.safepork-conference.com/Workshops.981.0.html">https://www.safepork-conference.com/Workshops.981.0.html</a>

<b>Activity</b>	RIBMINS Working Group 3 workshop ("Risk-based meat inspection and integrated meat safety assurance at abattoir level") held at ECVPH conference in October 2019 in Edinburgh (UK)
<b>Target</b>	More than 30 specialists and residents of the European College of Veterinary Public Health.
<b>Outcome</b>	The workshop included presentation of the objectives of the Working Group 3 and thorough discussion of the new meat safety system at abattoir level with the audience.
<b>Link</b>	<a href="https://ribmins.com/ribmins-workshop-at-ecvph-conference-in-edinburgh/">https://ribmins.com/ribmins-workshop-at-ecvph-conference-in-edinburgh/</a>

<b>Activity</b>	Meeting of European Livestock and Meat Trade Union in September 2021 (online)
<b>Target</b>	More than 20 representatives of livestock markets, livestock traders (cattle, horses, sheep, pigs), meat traders (beef, horse meat, sheep meat, pig meat), and the meat industry (slaughterhouses, cutting plants, meat preparation plants).
<b>Outcome</b>	RIBMINS and its main results presented to the audience. Presentation was followed by a panel discussion with questions from the audience.



<b>Link</b>	<a href="http://uecbv.eu/cgi?!g=en&amp;pag=1914">http://uecbv.eu/cgi?!g=en&amp;pag=1914</a>
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<b>Activity</b>	SafePork 2023 conference (including RIBMINS workshop) held in May 2023 in New Orleans (USA)
<b>Target</b>	More than 80 researchers, meat industry and governmental representatives coming from all around the world and interested in modernization of pig meat inspection and pig meat safety assurance system.
<b>Outcome</b>	Three lectures in relation to work done in RIBMINS were given during the conference (two Dissemination Conference grants and one ITC conference grant related) and twelve lectures were given to the participants of the workshop. All lectures were followed by a panel discussion with questions from the audience.
<b>Link</b>	<a href="https://www.regcytes.extension.iastate.edu/safepork/agenda/">https://www.regcytes.extension.iastate.edu/safepork/agenda/</a>

<b>Activity</b>	Meeting of Union of European Veterinary Hygienists in June 2023 (online)
<b>Target</b>	More than 30 veterinarians (representing different European countries) working in food safety area
<b>Outcome</b>	RIBMINS (particularly risk-based meat safety assurance concept) and its main results presented to the audience. Presentation was followed by a panel discussion with questions from the audience.
<b>Link</b>	<a href="https://uevh.fve.org/">https://uevh.fve.org/</a>

## Exploitation activities

The Action undertook the following activities to ensure exploitation (use, in particular in a commercial context) of the Action's achievements:

<b>Activity</b>	Presentation of the Action's results at conferences and other scientific meetings
<b>Target</b>	Participants of scientific conferences and meetings coming from academia, regulatory authorities and food industry
<b>Outcome</b>	Aims and plans of the Action, results achieved and call for joining the Action were presented. Awareness of the need of modernization of traditional meat safety assurance systems was raised.

## Action Success(es)

The Action's two most significant successes were the following:

- Establishment of an active network of researchers as well as representatives of competent authorities and meat industry, that will continue working together on joint scientific and educational publications, research projects, etc.
- Over thirty publications of the Action's work in high-calibre scientific journals such as Food Control (including in RIBMINS Special Issue: <https://www.sciencedirect.com/journal/food-control/special-issue/10RFBRHCX6X>), Trends in Food Science and Technology, Meat Science, etc. (<https://ribmins.com/reports-publications/>)

## Action Expenditure

The table below shows the budget allocated to the Action for each Grant Period:

#	Grant Period	Start Date	End Date	Budget allocated to Action (EUR)
1	AGA-CA18105-1	1-5-2019	30-4-2020	149,014.70 (EUR)
2	AGA-CA18105-2	1-5-2020	31-10-2021	154,554.25 (EUR)
3	AGA-CA18105-3	1-11-2021	31-10-2022	183,699.85 (EUR)
4	AGA-CA18105-4	1-11-2022	3-9-2023	181,332.23 (EUR)