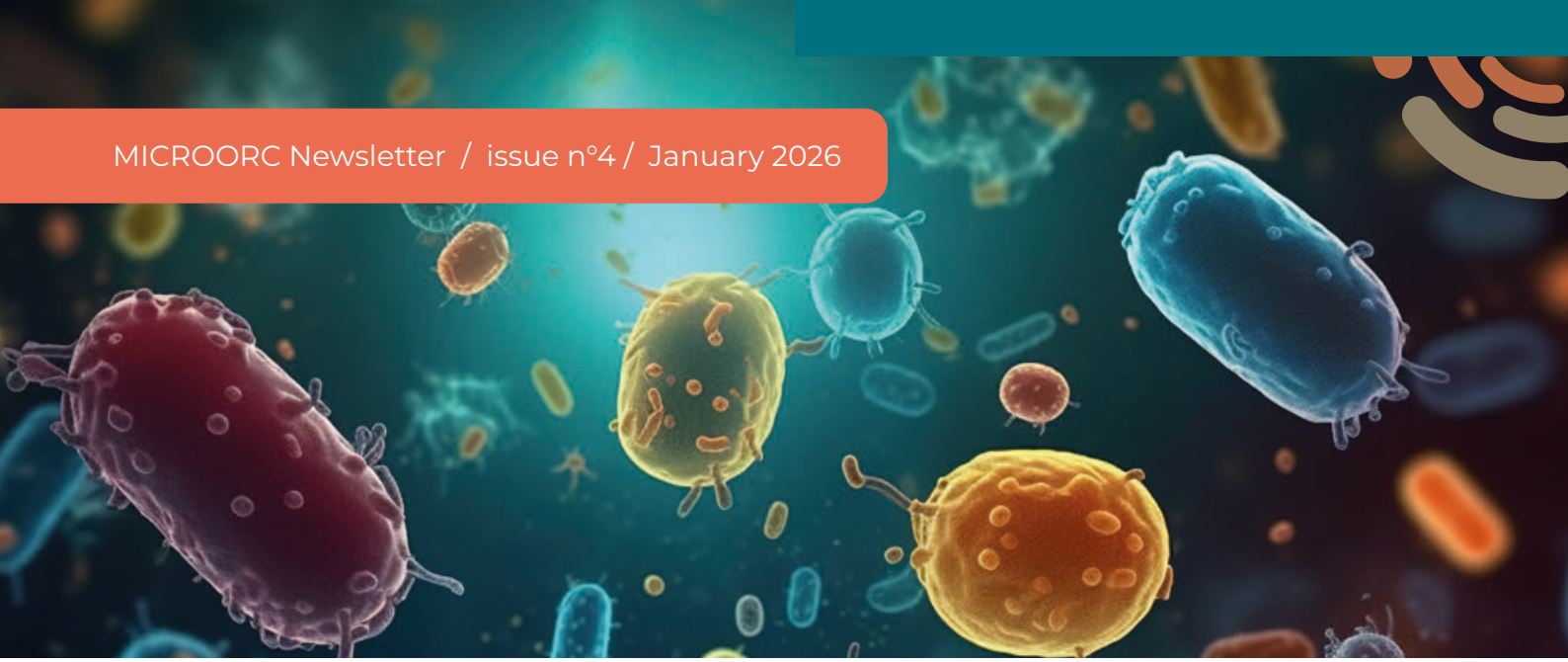


MICROORC

Orchestrating food system microbiomes to minimize food waste

From science to impact: MICROORC in action

Welcome to MICROORC Newsletter #4, where cutting-edge research meets real-world impact.

In this edition, we share exciting new scientific results, highlight recent publications, and showcase how MICROORC is actively engaging with researchers, industry, policymakers, and the wider public across Europe.

What is MICROORC really about?
Our latest video offers a clear and inspiring answer. Project coordinator Solveig Langsrud shares the vision behind MICROORC and explains how microbiome science can support safer, more sustainable food systems while helping to reduce food waste. Watch the video to discover the project's goals, impact, and ambition.

From innovative biosolutions for safer and more sustainable food systems to lively discussions at major conferences and public science events, this issue captures the growing momentum of the project. We also look ahead to upcoming opportunities to connect, exchange knowledge, and shape the future of food safety and sustainability together.

Dive in and discover what's new in the MICROORC journey!

Young researchers involved in the project

This section introduces the researchers involved in the MICROORC project, with a particular focus on early-career scientists. Through short profiles, it aims to highlight their backgrounds, roles, and contributions to the project activities, complementing the general project updates and showcasing the people driving MICROORC's research and innovation

Beatriz Nunes Silva holds a master's degree in Biological Engineering and a PhD in Food Science, Technology and Nutrition from the University of Minho. With strong expertise in food microbiology, she combines laboratory research with computational data analysis and has contributed to several national and international research projects. Her research focuses on biocontrol of foodborne pathogens, natural antimicrobials, microbial risk analysis and predictive microbiology. Since joining MICROORC in April 2024, Beatriz has been actively involved in WP2, WP3, WP4 and WP5. At UCP, she leads environmental monitoring in food production, shelf-life and challenge studies, sensory analyses of meat and plant-based burgers, and evaluates biosolutions to control microbial growth.

Maria João Nunes holds a bachelor's degree in microbiology and a master's degree in food safety from Universidade Católica Portuguesa. She is currently pursuing a PhD in Biotechnology in collaboration with the Center of Biotechnology and Food Chemistry and the industrial partner Primor – Charcutaria Prima S.A., under the supervision of Professor Paula Teixeira. Within MICROORC, her work focuses on the development and pilot-scale production of meat analogues, where she leads product optimisation and scale-up activities and supports coordination between academic and industrial partners. Her research bridges applied biotechnology and food innovation, contributing to more sustainable protein solutions.

Joana Barbosa holds a PhD in Biotechnology–Microbiology and degrees in Food Science and Technology and Microbiology from Universidade Católica Portuguesa. Her research focuses on food safety, with strong expertise in foodborne pathogens - particularly Listeria monocytogenes and Clostridioides difficile - and in the development and validation of biocontrol strategies such as bacteriocins, bioactive compounds, probiotics and functional foods. She has contributed to more than 20 research projects, many in close collaboration with industry, and has authored over 50 peer-reviewed scientific publications. Since joining MICROORC in January 2024, Joana has contributed to WP2, WP3 and WP4, leading environmental monitoring and shelf-life studies, supporting the development of spoilage organism collections and rapid detection tools, and evaluating biosolutions to control microbial growth in meat analogue products.

Milena Siemiatkowska is a PhD student at the University of Copenhagen (UCPH) supervised by Professor Marianne Thomsen and contributes to WP5 (Consumer acceptance and sustainability). She holds an MSc in Technology in Integrated Food Studies from the University of Copenhagen, and has a background combining food science, sustainability, and applied environmental assessment methods. Within MICROORC, Milena's work focuses on evaluating project solutions (e.g., biosolutions, packaging concepts and smart/dynamic labelling) through a multicriteria

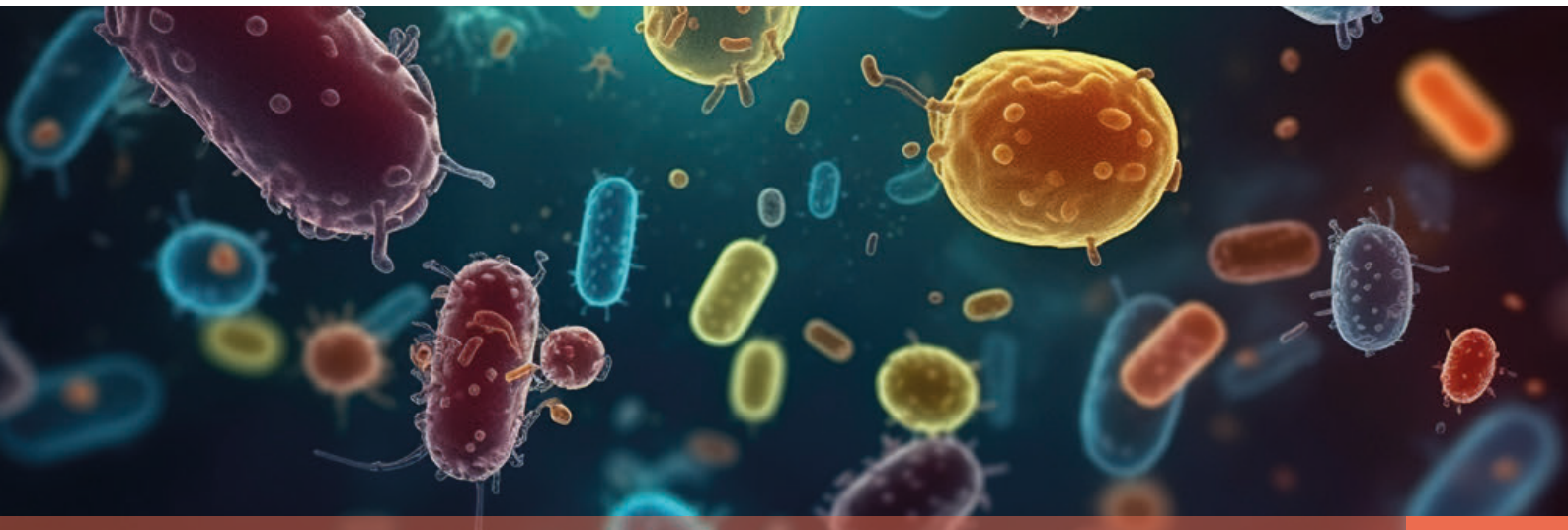
sustainability assessment approach, covering environmental, economic and social dimensions. Her research supports the assessment of MICROORC innovations for fresh chicken, salmon and plant-based meat analogues, with the goal of understanding under which conditions these solutions can deliver reduced food waste, improved sustainability performance and market relevance.

Recent publications

New MICROORC study highlights the potential of biosolutions for sustainable food systems.

A new scientific paper from the MICROORC project has just been published by Marianne Thomsen, Françoise Leroi, Delphine Passerini, Milena Siemiatkowska, Tirzania Sopacua, Véronique Zuliani, Kristina Andersson, Paula Teixeira, Fatima Poças, Even Heir, and Solveig Langsrud. The study explores the potential of biosolutions, such as food cultures and fermentates, as innovative and sustainable alternatives to conventional food preservation methods. These solutions not only enhance food safety and quality, but also help reduce food waste while preserving nutritional value and sensory characteristics - benefits that resonate strongly with consumers.
Importantly, the research highlights how biosolutions can contribute to more sustainable and resilient food systems by lowering the risk of foodborne illnesses, supporting circular economy principles, and strengthening consumer trust. Environmental sustainability and alignment with European regulatory frameworks are also key aspects addressed in the study. By taking a holistic perspective, the authors offer valuable insights for industry stakeholders and policymakers seeking to integrate biosolutions into future food production systems that are both resource-efficient and environmentally responsible. This publication marks another significant milestone for MICROORC, reinforcing the project's commitment to innovation in support of a safer and more sustainable food value chain.

Download the publication here!



Latest events attended

MICROORC at the European Researchers' Night

MICROORC had the pleasure of joining this year's European Researchers' Night, an event held in September 2025 and dedicated to bringing science closer to people. The Universidade Católica Portuguesa Team showcased the project's innovative work on sustainable solutions to reduce and prevent food spoilage and waste in a fun and engaging way. Visitors of all ages immersed themselves in the world of science through games, discussions, and experiments. At Universidade Católica Portuguesa's booth, kids enjoyed a small "lab activity" simulating microbiological analysis, participants tested their senses with smelling samples, and everyone was invited to vote with colorful marbles on whether they would consume chicken preserved with microbiome-based solutions. Out of 64 votes, the results were clear: 41 said "sure!", 19 said "maybe", and only 4 said "no way." In total, we interacted with at least 100 curious and enthusiastic participants – from the general public to fellow researchers – and received highly positive feedback. Events like this are a wonderful opportunity to inspire curiosity, spark dialogue, and show how science can contribute to a more sustainable future.

MICROORC showcased at Ecomondo 2025

MICROORC joined ECOMONDO, the benchmark event in Europe for technological and industrial innovation in the field of green and circular economy, which was held in Rimini (Italy) from 4th to 7th November 2025. The project was presented to industry, research, innovation and policy experts of the Bioeconomy fields in the framework of the session "Innovative solutions for waste prevention and circular resources

management “, held on Thursday, 6th November. MICROORC was also displayed in the PNO Innovation Italy hub of projects. PNO – the partner leader of the Exploitation and Dissemination activities of the project – provided more information about the initiative in its booth.

MICROORC showcased at Ecomondo 2025

At the 1st International Conference on Fermented Foods in Bolzano (28–30 October 2025), Françoise Leroi from IFREMER presented MICROORC’s latest advances in using food cultures to enhance the safety and shelf life of cold-smoked salmon. Her work demonstrated how specific microbial strains can effectively inhibit Listeria monocytogenes and limit spoilage, without compromising sensory quality. Among the tested cultures, a non-tyramine-producing mutant of Carnobacterium divergens showed outstanding potential for safe, natural protection against both pathogens and spoilage organisms, marking a promising step toward cleaner and more sustainable seafood preservation.

MICROORC contributions featured at EFFoST 2025 in Porto

The 39th EFFoST International Conference in Porto, Portugal (17–19 November 2025), brought together leading researchers and industry experts to explore innovations driving the transformation of food systems. MICROORC was well represented through three invited keynote speakers who shared insights and results from the project:

- Joana Barbosa (Universidade Católica Portuguesa) presented “*Controlling Listeria monocytogenes in sliced plant-based meat analogues: role of fermentates and food cultures*”, highlighting novel strategies to enhance food safety in alternative protein products.
- Solveig Langsrud (Nofima) delivered a keynote on “*Reducing food waste through innovation: Technologies and trade-offs in sustainable processing*”, showcasing

how MICROORC technologies contribute to smarter, more sustainable food production. (Photo to be added.)

- Véronique Zuliani (Novonesis) presented *"How fermentate-based solutions can address critical challenges in sustainable food systems"*. While the talk broadly addressed sustainable biotechnological solutions, part of the presentation featured MICROORC results and data, providing valuable visibility to the project within a wider scientific and industrial context.

Through these contributions, MICROORC continues to strengthen its presence in the European food innovation landscape – promoting solutions that enhance food safety, extend shelf life, and reduce waste across the food value chain.

MICROORC presented at the 5th FoodConf in Budapest

In November 2025, Aira Joy Aquino from the University of Veterinary Medicine Budapest (UVMB) presented results from the MICROORC project at the 5th Conference on Food Science, Technology and Innovation (FoodConf), held in Budapest, Hungary. Her presentation showcased findings from experiments and consumer surveys conducted in Hungary, Norway, and Portugal. These results will support the development of improved shelf-life determination practices in the food industry and contribute to food-waste reduction through the innovations and technologies being developed within the MICROORC project.

MICROORC presented at the 5th FoodConf in Budapest

MICROORC participated in the Congress of Microbiology and Biotechnology 2025 (Microbiotec'25), held from 4–6 December in Ponta Delgada, Açores, Portugal. The project was represented through an oral presentation titled "The role of food cultures and fermentates in the shelf life of soy-based burgers", delivered by Beatriz Nunes Silva, Joost de Mooij, Verónique Zuliani, and Paula Teixeira. The talk, presented under the conference theme Food Microbiology & Biotechnology, highlighted how food cultures and fermentates can support safer, longer-lasting soy-based burgers, an important step toward reducing food waste and improving shelf-life prediction methods within plant-based foods. The work showcased ongoing research developed in the context of MICROORC, contributing to the project's broader goal of enabling more sustainable and reliable shelf-life determination practices. Hosted every two years, Microbiotec brings together national and international researchers, industry partners, and young scientists entering the field. As stated by the organisers, the congress aims to "promote knowledge and discussion among researchers, and between academia and industry," providing a vibrant forum for exploring innovations and challenges in microbiology and biotechnology. MICROORC's contribution at Microbiotec'25 reflects the project's commitment to strengthening collaboration across disciplines and sectors while advancing solutions that can meaningfully reduce food waste through improved microbiological and biotechnological approaches.

Upcoming event: 1st joint MICROORC & FOODGUARD webinar!

We're excited to announce the 1st joint FoodGuard & MICROORC Webinar!

04 February 2026 | 15:00–16:00 CET | Online via Zoom

Join us for an hour of insights on how microbiome innovation is shaping the future of food safety, sustainability, and waste reduction.

Speakers:

- Solveig Langsrud, Orchestrating food system microbiomes to minimize food waste (MICROORC)

- George-John Nychas, Microbiome applications & technological hubs to minimize food loss and waste (FOODGUARD)

Followed by a live Q&A and opportunities for interaction!

This is the first webinar bringing together two EU-funded initiatives committed to building smarter, safer, and more sustainable food systems. Don't miss the chance to connect and learn from leading experts.

Zoom link.

Let's kick off 2026 with knowledge sharing and collaboration!

Policy dialogue

MICROORC recently contributed to a policy dialogue initiated by the Norwegian Food Authorities in the context of a revision of guidance on Listeria monocytogenes shelf-life studies for RTE foods, to be discussed at EU level. The feedback highlighted the importance of adequately considering food microbiota using solid methodologies, as well as the need to avoid overly conservative shelf-life setting practices that could drive unnecessary food waste. This exchange exemplifies how MICROORC-generated knowledge can meaningfully inform evidence-based policy discussions and future regulatory developments.

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