

Biomehealth Newsletter

Catch up on the latest research, fieldwork, and innovations from the BiomeHealth Project!



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Harnessing Beneficial Microorganisms for Sustainable Plant Health

Research Spotlight

How can **beneficial microorganisms** help **protect crops** from disease while reducing the need for chemical pesticides? Within the **BiomeHealth** project, researchers are investigating **innovative microbiome-based** approaches to improve plant health and combat important pathogens such as *Erwinia amylovora* and *Stemphylium vesicarium*. By exploring the complex interactions between plants, pathogens, and beneficial microorganisms, the project aims to **develop sustainable biological control strategies** that support healthier crops and more resilient agricultural systems. Discover how cutting-edge research is helping shape the future of environmentally friendly plant disease management and sustainable agriculture.

Research Spotlight

Harnessing Beneficial Microorganisms for Sustainable Plant Health



Plants live in close **association** with diverse **communities of microorganisms** that inhabit their **roots, leaves, fruits, and surrounding soil**. Together, these microorganisms form the **plant microbiome**, a complex and dynamic ecosystem that plays a crucial role in plant growth, nutrition, and resistance to disease.

As agriculture faces increasing **challenges from climate change**, emerging pathogens, and the need to **reduce chemical pesticide** use, researchers are exploring new ways to **harness** these naturally occurring microbial communities to **improve crop health**. **Beneficial microorganisms** can help plants by competing with pathogens for resources, producing antimicrobial compounds, stimulating **plant immune responses**, and promoting overall **plant resilience**.

Within the **BiomeHealth project**, researchers are investigating **sustainable approaches** to manage important phytopathogens such as *Erwinia amylovora*, the causal agent of fire blight, and *Stemphylium vesicarium*, responsible for brown spot disease in pear orchards. By combining **microbiology, molecular biology, genomics, and advanced diagnostic tools**, the project seeks to better understand the interactions between pathogens, plants, and beneficial microorganisms.

Recent **BiomeHealth activities** have strengthened expertise in these areas through **international staff exchanges** and specialised training courses. Researchers have gained **hands-on experience** in pathogen detection, **molecular diagnostics, bioinformatics, and innovative techniques** such as Loop-Mediated Isothermal Amplification (LAMP), contributing to the development of faster and more reliable disease monitoring strategies.

The **knowledge** generated by **BiomeHealth** will contribute to the **development of environmentally friendly solutions** that support healthier crops, more resilient agricultural systems, and a **sustainable future** for European agriculture.



Project Updates

Advanced Course Explores Emerging Approaches to Pathobiome Dynamics

BIOMEHEALTH successfully delivered its second **Advanced Course**, *Theoretical and Practical Aspects of Pathobiome Dynamics*, bringing together 23 participants from diverse academic and professional backgrounds. The course combined **expert-led online lectures** with a **hands-on laboratory session** at the Faculty of Sciences of the University of Porto (FCUP).

Participants explored **innovative approaches** for studying **microbial communities** associated with plant health and disease, including **aerobiome monitoring**, **DNA metabarcoding**, **metabarcoding sequencing**, **spatial transcriptomics**, and **microbial characterization technologies**. International experts from Portugal, the Netherlands, the United Kingdom and China shared cutting-edge methodologies currently used in microbiome and plant health research. The course concluded with practical training in **bioinformatics workflows for metabarcoding analysis** and **microbial characterization using IR-Biotyper technology**, providing participants with valuable hands-on experience and strengthening expertise in microbiome-based approaches for sustainable plant health research.



Spring School Addresses Pathogen Detection in a Changing World

From 31 March to 2 April 2026, **BIOMEHEALTH** hosted its first **Spring School**, *Detection of Pathogens in a Changing World*, at the Faculty of Sciences of the University of Porto (FCUP). The event brought together **students, researchers, and professionals** interested in the **latest developments in plant pathogen detection**, disease surveillance, and sustainable crop protection.

Through a combination of **expert lectures**, practical demonstrations, and interactive discussions, participants explored **innovative diagnostic technologies** and emerging challenges associated with plant health in a rapidly changing environment. The programme provided **valuable opportunities** for knowledge exchange between internationally recognised experts and early-career researchers, fostering **collaboration across disciplines and institutions**.

The Spring School represents another important **milestone** in **BIOMEHEALTH's** commitment to strengthening **research capacity**, promoting **scientific excellence**, and supporting the development of **innovative solutions for sustainable plant disease management**.



Project Updates

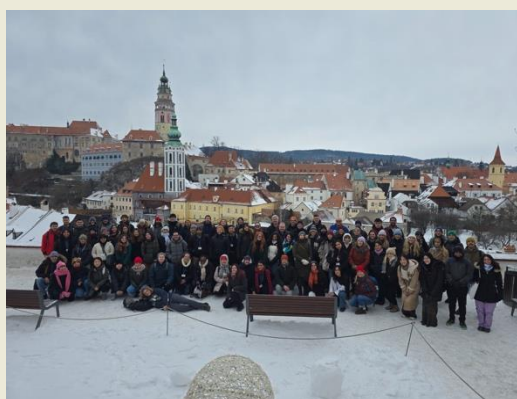
BIOMEHEALTH Researcher Strengthens Horizon Europe Proposal Writing Skills



Nuno Mariz-Ponte, a researcher involved in the BIOMEHEALTH project at REQUIMTE / University of Porto, attended the **Advanced Course “Master of Proposal Writing in Horizon Europe”** in Brussels, Belgium, on 17–18 February 2026.

Led by expert proposal writer **Jelena Kajganović**, the course focused on developing competitive **Horizon Europe proposals**, covering **project design, expected impact, evaluation criteria, and submission strategies**.

The training provided valuable **opportunities for networking and knowledge exchange** with representatives from several European institutions. The knowledge acquired will support BIOMEHEALTH in **identifying new funding opportunities, strengthening collaborations, and developing future research initiatives** aligned with European priorities.



BIOMEHEALTH Researcher Participates in International Genomics Workshop

Laura Regalado, a PhD candidate at REQUIMTE and member of the BIOMEHEALTH team, recently attended the **internationally recognised Evomics Workshop on Genomics**, held in Český Krumlov, Czechia, from 11–24 January 2026.

The intensive **two-week programme** provided advanced training in **evolutionary and population genomics, combining lectures, computational exercises, and hands-on bioinformatics activities**. The knowledge gained will support ongoing BIOMEHEALTH research, particularly in the genomic analysis of *Erwinia amylovora*, the causal agent of fire blight.

Laura's participation reflects BIOMEHEALTH's **commitment to scientific excellence**, capacity building, and the development of advanced expertise in genomics and plant health research.

BIOMEHEALTH Researcher Receives Poster Award at International Symposium

Catarina Leal, a member of the BIOMEHEALTH research team, participated in the **21st International Reinhardtbrunn Symposium on Modern Fungicides and Antifungal Compounds**, held in Friedrichroda, Germany.

The symposium brought together leading researchers to discuss recent **advances in fungicides, antifungal compounds, resistance mechanisms, and biocontrol strategies**. During the event, Catarina was honoured with a **Poster Award** in recognition of her research presentation, highlighting the **quality and impact** of the work developed within the BIOMEHEALTH project.

This achievement reflects BIOMEHEALTH's **commitment to scientific excellence and international visibility**.



Building the Future of Plant Health Services

One of the most significant achievements of the BIOMEHEALTH project has been the establishment of **miCrop – Microbial And Agronomic Solutions**, a new laboratory dedicated to plant health diagnosis, monitoring, and biological control solutions.

Created within REQUIMTE at the University of Porto, miCrop was conceived as a bridge between scientific knowledge and practical solutions for agriculture, forestry, nurseries, public authorities, and industry. The laboratory was established to address the growing need for rapid and reliable plant pathogen detection, disease surveillance, and technical support in a context where emerging plant diseases and increasing phytosanitary challenges threaten agricultural productivity, biodiversity, and food security.

Over the past months, the laboratory facilities have been fully developed and equipped with the infrastructure necessary to perform advanced phytopathological analyses. The new space is now operational and prepared to provide specialized services for the detection, identification, and monitoring of plant pathogens across a wide range of agricultural and environmental systems. Through the integration of modern diagnostic approaches and expert technical support, miCrop aims to support evidence-based decision-making and contribute to more effective disease management strategies.



Beyond diagnostic services, miCrop has been designed as a platform for innovation in sustainable plant protection. A central component of its future activities will be the development and evaluation of biological control solutions as environmentally friendly alternatives to conventional disease management approaches. To support this ambition, the laboratory is planning the installation of dedicated bioprocessing infrastructure, including a reactor system that will enable the cultivation, testing, and optimization of beneficial microorganisms with potential applications as biological control agents. This capability will create opportunities for the development of innovative products and technologies that contribute to healthier crops and more sustainable agricultural practices.

The establishment of miCrop represents an important step in strengthening Portugal's capacity in plant health services and innovation. The next phase will focus on building partnerships with companies, growers, cooperatives, plant producers, and governmental agencies, ensuring that the laboratory's impact is translated into tangible benefits for end users. By combining diagnosis, monitoring, consultancy, and biological control development within a single platform, miCrop aims to become a national reference centre for plant health services and a key contributor to the transition towards more resilient and sustainable agricultural systems.

The creation of miCrop reflects the long-term vision of the BIOMEHEALTH project: transforming scientific capacity into practical solutions that support innovation, competitiveness, and sustainability in the agro-food sector.



Meet the Researchers Behind BiomeHealth

BiomeHealth



Ronaldo
Rwubuzizi

As a **PhD candidate** at the Department of Agriculture and Food Sciences (DISTAL) of the **University of Bologna**, my research focuses on the **use of beneficial microorganisms** as biological control agents to improve the **resilience of apple and pear trees** under changing **climate conditions**. Within the BIOMEHEALTH project, I study **plant-microbe interactions and sustainable strategies** to manage important pathogens such as *Erwinia amylovora* and *Stemphylium vesicarium*.

My work involves collecting and analysing **microbial communities** from **orchards** across different Italian regions, identifying **microorganisms with the potential to suppress diseases**, promote plant growth, and withstand environmental stress. These promising strains are further evaluated as **synthetic microbial communities** for **sustainable crop protection**.

Being part of **BIOMEHEALTH** has **strengthened my expertise** in microbiology, plant health, and climate-resilient agriculture, while providing valuable opportunities for international collaboration.

What motivates me most is contributing to **innovative and environmentally friendly solutions** that can help farmers protect crops and build more sustainable agricultural systems.

Hi, I am **Paulo Pinto**, a **PhD candidate** at the Faculty of Sciences of the **University of Porto** (FCUP), Portugal, and a researcher within the BIOMEHEALTH project.

My research focuses on **biological control and plant microbiomes**, exploring how microbial communities contribute to **disease suppression** and plant health. Within **BIOMEHEALTH**, I work on *Stemphylium vesicarium*, the causal agent of **pear stemphyliosis**, identifying **beneficial microorganisms** with biocontrol potential and studying their interactions with plants and pathogens. I am also involved in the **establishment of miCrop**, the new plant pathogen detection and diagnosis centre at REQUIMTE.

I believe BIOMEHEALTH can contribute significantly to **more sustainable plant health management** through improved pathogen detection tools, microbiome-based monitoring approaches, and environmentally friendly disease control strategies. These advances can help **reduce dependence on chemical pesticides** while improving **crop resilience and productivity**. Being part of BIOMEHEALTH has expanded my expertise in advanced pathogen detection technologies, microbiome analysis, and international collaboration. What I enjoy most is working within a **multidisciplinary network of researchers** committed to developing innovative and sustainable solutions for plant protection. I am particularly excited about the potential of **microbiomes and biological control** as key tools for **the future of agriculture**.

Paulo Pinto



Future events

Upcoming Training Course on Pathogen–Phytobiome–Exposome Interactions and Disease Progression

As part of its capacity-building activities, **BIOMEHEALTH** will organise the training course **“Pathogen–Phytobiome–Exposome Interactions and Disease Progression”** on **2–3 July 2026** at the **Faculty of Sciences of the University of Porto (FCUP)**, Portugal.

The course will address current approaches to **sustainable plant disease management**, including **biocontrol agent selection**, **disease epidemiology**, **bacterial phenotyping**, **exposome components**, and **plant–microbe signalling networks**. Delivered by researchers from the **University of Bologna**, the programme will provide participants with insights into the complex **interactions between pathogens, microbial communities, environmental factors, and disease development**.

This activity continues BIOMEHEALTH's **commitment to strengthening expertise and promoting knowledge exchange in plant health research**.



BIOMEHEALTH Team to Meet in Bologna for Staff Visit

The next **BIOMEHEALTH Staff Visit** will take place at the **University of Bologna (UNIBO)** between the end of August and the beginning of September 2026. The visit will bring together **researchers from all partner institutions** to strengthen **collaboration and promote knowledge exchange** within the consortium.

Participants will have the **opportunity to visit research infrastructures and laboratories**, discuss ongoing activities and results from each partner institution, and **explore methodologies related to biological control agents (BCAs)** and sustainable plant disease management. The programme will also provide a valuable forum for **planning future collaborative research activities** and identifying **new opportunities** for scientific cooperation.

The visit represents another **important step in BIOMEHEALTH's mission** to build research excellence through international collaboration.