

The background of the cover features several spherical microbial colonies, likely yeast or bacteria, with a textured, orange-brown surface. They are set against a dark background, with a light grey diagonal shape overlapping the bottom left. A grid of small white dots is visible on the right side of the light grey area.

# Annual Report

2023



**MIRRI** MICROBIAL ERIC  
RESOURCE RESEARCH  
INFRASTRUCTURE

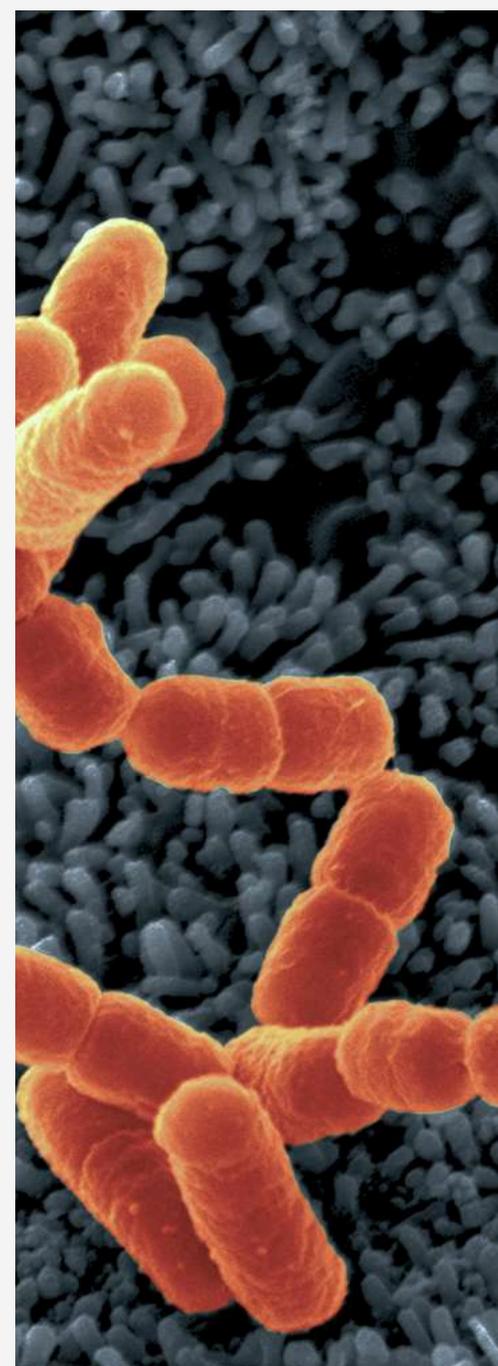
EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM



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# 1 EXECUTIVE SUMMARY

Our Timeline Achievements

JUN  
2022

MIRRI granted the **ERIC status** by the European Commission

OCT  
2022

MIRRI receives the **ERIC plate** from the European Commission at ICRI 2022

DEC  
2022

Inauguration of **MIRRI-ERIC Headquarters**

MAY  
2023

MIRRI-ERIC established as a legal entity in **Portugal**

JUL  
2023

IS\_MIRRI21: MIRRI implementation **project ends**

SEP  
2023

Nomination of the new **MIRRI-ERIC Executive Director**

OCT  
2023

Election of the new **Chair of the Assembly of Members**

OCT  
2023

Election of the two new **Vice-Chairs of the National Coordinators Forum**

NOV  
2023

Two **new institutions** join the Spanish National Node: **ISCIII - Instituto de Salud Carlos III Fundación MEDINA**

# 2 FOREWORD

From Marleen Bosschaerts, Chair of the Assembly of Members

It is an honour for me to write the foreword of the very first activity report of the Microbial Resource Research Infrastructure – European Research Infrastructure Consortium, or in short MIRRI-ERIC.

After its official recognition as an ERIC by the European Commission in June 2022, the inauguration of the MIRRI headquarters in Braga, Portugal, was celebrated in December 2022. The Assembly of Members was installed, with Dr Eric Guittet (France) as the first Chair. During the year 2023 crucial milestones in the lifespan of a decentralised Research Infrastructure were realised:



MIRRI-ERIC was set up as an international organisation and included in the Portuguese Registry of Legal entities in May 2023. Essential administrative matters for a new-born organisation were settled: MIRRI obtained a VAT and PIC number, opened a bank account, and sent out the first invoices to its Members.

The selection process for the Executive Director was launched and resulted in the appointment of Dr Ana Melo Portugal in September. Together with the secretary the nucleus of the Central Coordinating Unit was established.

Until July the activities of MIRRI-ERIC were covered by the Horizon2020 project IS\_MIRRI21 [1]. The project's numerous deliverables pave the way to the operationalisation of MIRRI-ERIC.

MIRRI-ERIC and its partners can already be proud on the huge success rate in their involvement in European projects, working together with other Research Infrastructures in fields as diverse as the capacities of the microbial resources included in its catalogues: health, environment, agriculture, biomanufacturing. With as cherry on the cake the approval of the Microbes4Life project, coordinated by MIRRI-ERIC and kicked off in February 2024.

In November, MIRRI-ERIC received Romania's request to become its first Observer, from 2024, and two Spanish microbial culture collections required to be included as new partners of the Spanish National Node. The further expansion of the RI will be a major objective for the next years.

MIRRI-ERIC must still tackle a series of challenges. A stepwise approach to realise the objectives is developed in the work program. The journey is exciting!

[1] IS\_MIRRI21: Implementation and sustainability of the Microbial Resource Research Infrastructure for the 21st century, Horizon 2020 Grant Agreement 871129

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## EXECUTIVE DIRECTOR'S STATEMENT

*Written by Ana Portugal*



MIRRI-ERIC was established to create, operate, and develop a distributed pan-European infrastructure of microbial biological resources. Its mission is to ensure access to high-quality biobanks, associated data, related services, and cutting-edge facilities to advance research and innovation in the microbial and biotechnology fields.

This landmark project on the European Strategy Forum for Research Infrastructures (ESFRI) roadmap, within the Health and Food domain, officially launched its operations in September 2023 when the Executive Director assumed the role, supported by the Secretary Ana João Ferreira, seconded by the University of Minho. At inception, it comprised five founding members: Belgium, France, Latvia, Portugal (the statutory seat), and Spain. MIRRI-ERIC gained legal personality following the European Commission's implementing decision on June 16, 2022, and was registered in Portugal as an International Collective Person in May 2023, after recognition by the Portuguese Republic Foreign Affairs Ministry. The only remaining step for full managerial operationalisation is achieving tax exemption.

The operational structure of MIRRI-ERIC, supported by its National Nodes, is organized into Working Groups focusing on specific or cross-cutting domains. Participants in these Working Groups are experts from Partner Institutions that constitute the National Nodes, particularly from the Microbial Resource Research Centers (mBRCs). National Nodes are in the initial stages of formalization, and the Working Groups will naturally evolve from these entities.

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## EXECUTIVE DIRECTOR'S STATEMENT

### *More considerations*

The last quarter of 2023 was dedicated to consolidating MIRRI-ERIC as a legal entity, approving the Budget and Plan for 2023/24, and finalizing the Work Program for 2024 to 2028 in collaboration with the National Coordinators Forum. These actions will facilitate a more efficient and effective operation of this Research Infrastructure (RI) to better serve its users.

Additionally, in the last quarter of 2023, MIRRI-ERIC assumed the coordination of the Microbes4Climate project, which at the application stage was led by the University of Minho on behalf of MIRRI-ERIC. We also participate in-kind in the ERIC-Forum 2 Horizon Europe project. Three applications under the HORIZON-INFRA-2024-TECH-01-01 call are in progress and will be submitted in March 2024. An application to the FCT-Tenure call funded by the Portuguese Foundation for Science and Technology, for human resources contracts, is also being prepared for submission in March 2024.

Transitioning from the ESFRI Research Infrastructure Project phase to the ESFRI landmark Research Infrastructure operational phase has presented MIRRI-ERIC with new operational challenges, a broader geographical scope, and a new financial situation. The new Work Program for 2024-2028 addresses these challenges, focusing on four strategic objectives (SOs):

- SO1: Consolidate and Grow - Consolidate and expand MIRRI-ERIC's membership, establish a sustainable governance and operational structure, and enhance its visibility and recognition as an ESFRI landmark.
- SO2: Strengthen - Enhance MIRRI-ERIC's infrastructure, resources, and service provision by promoting it as an ESFRI landmark Research Infrastructure, offering enriched microbial resources to academia and industry worldwide.
- SO3: Empower - Develop internal capacity in data management and improve users' ability to access and utilize MIRRI-ERIC's microbial culture collections, expertise, and metadata.
- SO4: Leverage - Engage with other research infrastructures and international organizations in Europe and globally, and demonstrate MIRRI-ERIC's socio-economic impact.

With an enthusiastic and committed National Coordinators Forum, supportive Assembly of Members, and dedicated Central Coordinating Unit, along with the collaborative ecosystem of European Research Infrastructures, we are committed to ensuring MIRRI-ERIC's success for you, dear reader—whether you are a user, a funder, a policymaker, or a citizen. We are here for you!

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# MIRRI-ERIC: MISSION, VISION & VALUES

MIRRI-ERIC enables Bioscience and Bioindustry stakeholders to access diverse, high-quality bioresources and data legally and efficiently. By fostering collaboration, providing expertise, and ensuring long-term sustainability of microbial biodiversity, we enhance knowledge and professional development.

MIRRI strives to be the premier pan-European platform, unlocking the potential of microbial biodiversity for the bioeconomy and bioscience.

We aim to discover, disclose, and utilize novel microbial sources and knowledge, adding significant value to both known and undiscovered microbial diversity.

01

## COLLABORATION

MIRRI fosters a collaborative environment to inspire excellence and drive cross-border and interdisciplinary cooperation.

02

## INTEGRATION

We integrate fragmented resources, research, education, and industry to promote global responsibility towards biodiversity and construct an innovative Europe.

03

## EXCELLENCE

MIRRI upholds high standards of quality and reproducibility in microbial science, providing reliable resources, curated data, and tailored services.

04

## COMPLIANCE

We promote legal compliance, transparency, and mutual collaboration, ensuring adherence to regulations such as the Nagoya Protocol and best practices in biosafety and biosecurity.

05

## IMPACT

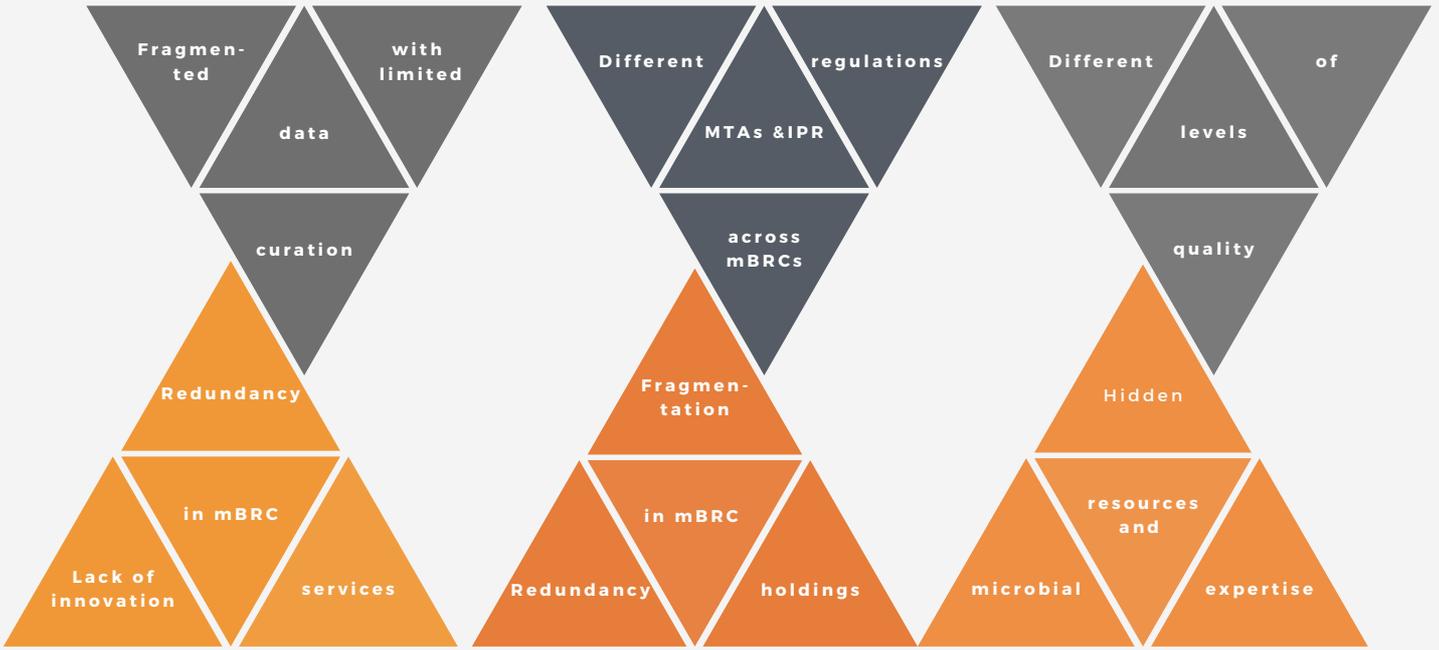
MIRRI-ERIC aims to improve the bioeconomy, create employment opportunities, and advance research in healthcare, sustainable agriculture, environmental conservation, food security, biofuel production, and livelihoods.

06

## ACCESSIBILITY

We facilitate access to facilities, services, resources, and expertise, enhancing European research capabilities and maximizing societal benefits.

# FROM:



## Fragmented Microbial Resources, Services and Expertise in Europe

# TO:



## Coordinated Resources, Services and Expertise

# MIRRI'S STRATEGIC AREAS

Our microbial resources

## HEALTH & FOOD

- Research on pathogenic microorganisms and human/human-animal infectious diseases
- Research & Development of new (bio)pharmaceuticals / therapeutic solutions (including antimicrobials, vaccines, phage therapies and microbiome therapeutics - for human use)

## AGRO-FOOD

- Research & Development of new, safe, healthy and sustainable food and feed products

## ENVIRONMENT & ENERGY

- Resources and methods for biological management of soils and crops
- Resources and methods for biomonitoring and/or bioremediation of microbial pathogens, persistent organic pollutants and plastics in soils and waters
- Research & Development of renewable biobased chemicals, materials and bioenergy sources
- Rescuing and preserving microbial biodiversity

Bioprospection | Preservation & Culturomics | Taxonomy  
Digital services & FAIR data | Legal/Regulatory issues & Standards

**BIODIVERSITY**

**BIOECONOMY**

**BIOTECHNOLOGY**

**SUSTAINABILITY**

**ONE HEALTH**

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# 3 SERVICES

Four specialized gates

The **Collaborative Working Environment (CWE)** serves as the cornerstone of MIRRI-ERIC's mission to facilitate communication, collaboration, and knowledge exchange within its stakeholder community. At the heart of this environment lies the **MIRRI Information System (MIRRI-IS)**, an innovative engine driving the seamless integration of microbial resources, data, services, and expertise.

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The CWE, designed as a virtual platform, acts as a nexus for stakeholders to access resources, information, and services efficiently. It encompasses four distinct gates, each tailored to cater to specific user needs:

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## RESEARCH INFRASTRUCTURE INFORMATION GATE:

This gate serves as a comprehensive repository of information regarding MIRRI-ERIC's activities, including newsletters, transnational access calls, and valuable links to other research infrastructures. By offering insights into MIRRI-ERIC's endeavours, it fosters transparency and encourages engagement among stakeholders.

## MICROBIAL RESOURCES, DATA & SERVICES GATE:

Positioned as the central hub within the CWE, this gate facilitates seamless access to a diverse array of microbial genetic resources, integrated metadata, and specialised services. Through streamlined ordering processes and harmonised procedures, it ensures that stakeholders can leverage microbial resources efficiently and effectively.

## COLLABORATION & EXPERTS GATE:

At the heart of innovation lies collaboration, and this gate serves as a virtual nexus for researchers to converge, exchange knowledge, and seek expert advice across various domains related to microbial resources. By fostering interdisciplinary dialogue and consultancy, it catalyses innovation and problem-solving within the microbial research community.

## TRAINING & EDUCATION GATE:

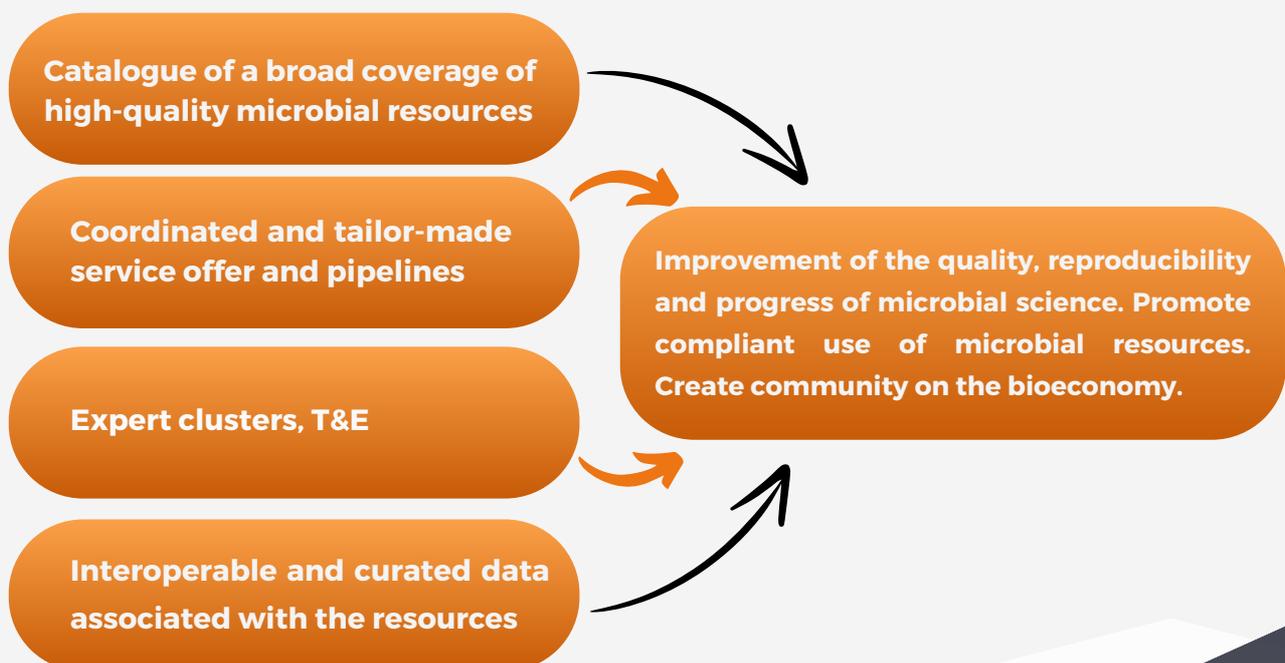
Recognizing the importance of capacity building, this gate offers a comprehensive suite of training programs tailored to scientists, industrial professionals, and partners alike. By equipping stakeholders with the necessary skills and knowledge, it not only fosters professional development but also nurtures a vibrant ecosystem of innovation and expertise within the scientific community.

# About the MIRRI Information System (MIRRI-IS)

The most pivotal component of the CWE is the development of the MIRRI-IS, integrated within the Microbial Resources, Data & Services Gate. Leveraging BioloMICS software and tools developed under the EOSC-Life project, the MIRRI-IS streamlines the management, analysis, and publication of biological data. It facilitates automatic integration of partner databases, ensuring adherence to FAIR principles (Findable, Accessible, Interoperable, and Reusable). Furthermore, it enables advanced features such as linking external data sources and developing tools for data analysis, thereby enriching the microbial data landscape.

MIRRI-ERIC's CWE and MIRRI-IS play pivotal roles in fostering collaboration and innovation within the microbial research community. By providing a dynamic platform for communication, collaboration, and knowledge transfer, the CWE breaks down barriers and facilitates interdisciplinary exchange. Moreover, the MIRRI-IS serves as a robust engine for data integration, analysis, and dissemination, thereby bolstering research outcomes and driving innovation in microbial resource utilisation.

**In conclusion:** the CWE and MIRRI-IS represent indispensable assets in MIRRI-ERIC's pursuit of advancing microbial research, development, and innovation. Through seamless collaboration, data integration, and knowledge exchange, these platforms empower stakeholders to unlock the full potential of microbial resources, thereby fostering scientific progress and societal benefit across Europe and beyond.



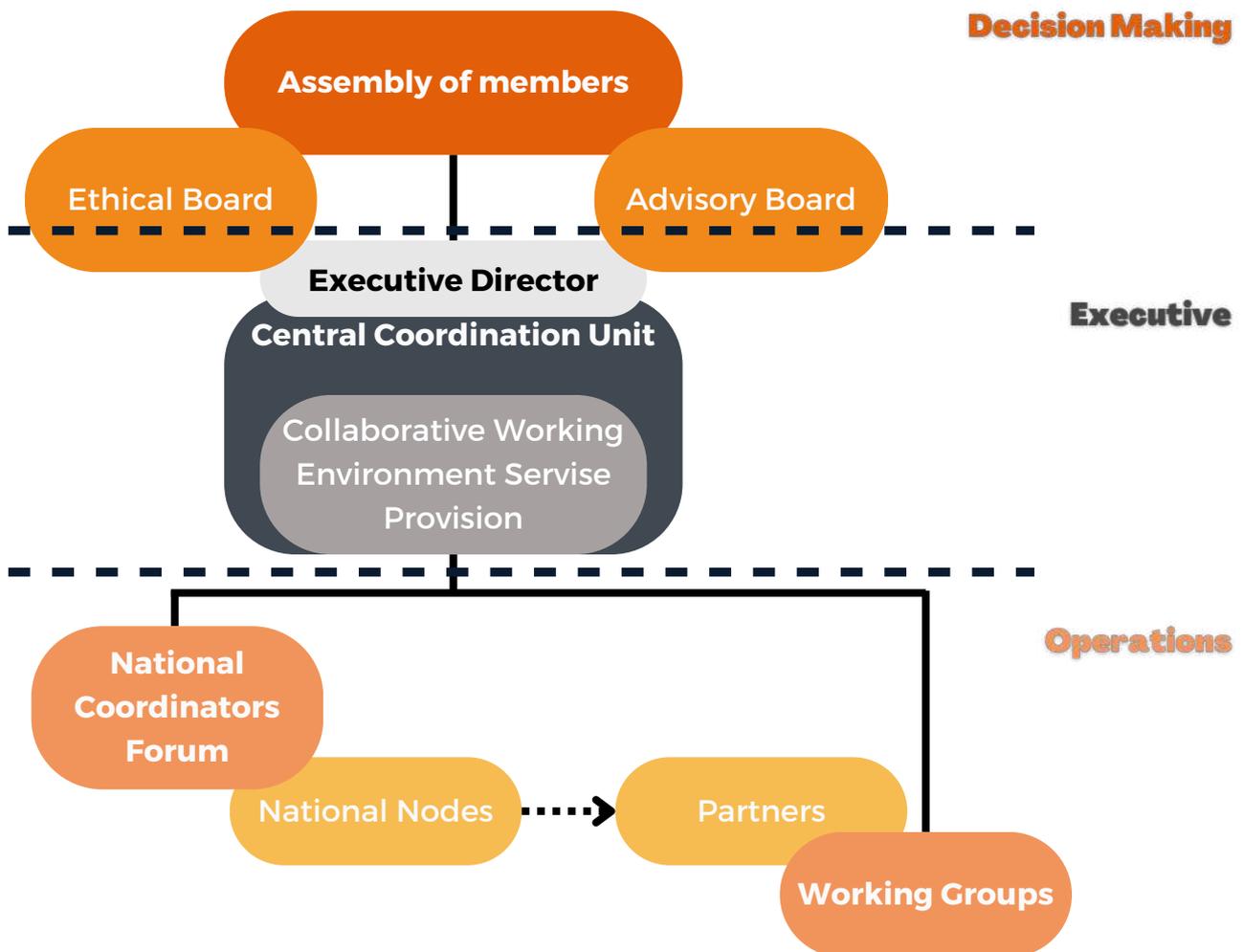
# 4

# ABOUT OUR TEAM

Distributed, yet centrally coordinated, pan-European Research Infrastructure.



# HOW WE ARE ORGANIZED



The **Assembly of Members (AoM)**, constituted by the Members/Observers and assisted by the Advisory and Ethical Boards, decides on the long-term strategy, governance and development of MIRRI-ERIC. Decisions made by the AoM are managed by the Chair with support of the staff of the MIRRI-ERIC Central Coordinating Unit (CCU), which is the executive secretariat of MIRRI-ERIC.

The **National Coordinators Forum (NCF)** is composed by the Executive Director and the National Coordinator of each Member - each Member designates a 'National Node' and a National Coordinator, who coordinates the MIRRI activities of the Partners on its territory and links these activities with MIRRI - and is chaired by the Executive Director and vice-chaired by up two elected members. The NCF supports the Executive Director and the and contributes to the development and execution of the Work Program, as well as enabling efficient interaction between MIRRI and the Partners.



## ASSEMBLY OF MEMBERS

### BELGIUM

- Marleen Bosschaerts - Chair\*
- Virginie Storms
- Phillipe Desmeth

### FRANCE

- Eric Guittet - Chair\*
- Michel-Yves Mistou
- Catherine Le Chalony
- Fay Betsou

### SPAIN

- Ignacio Baanante
- Aurora Zuzuarregui - Vice-Chair
- Antera Martel

### PORTUGAL

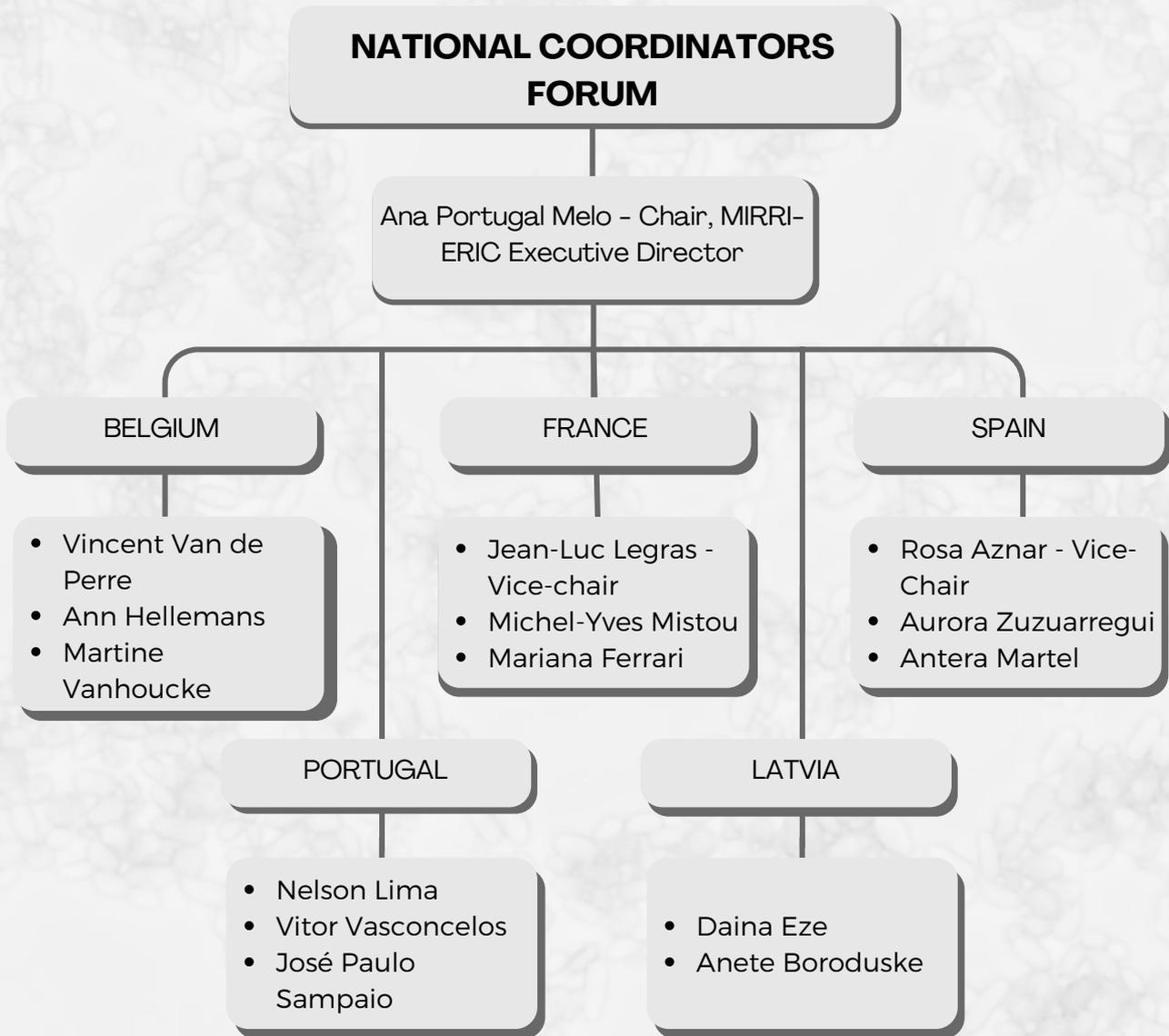
- Marta Abrantes - Vice-Chair
- Eugénio Campos Ferreira
- Andreia Feijão

### LATVIA

- Katerina Morosova
- Uldis Berkis
- Kaspars Ivanovs

*\*Eric Guittet served as the Chair of the Assembly of Members until September 30, 2023. Marleen Bosschaerts has since been elected as the new Chair.*



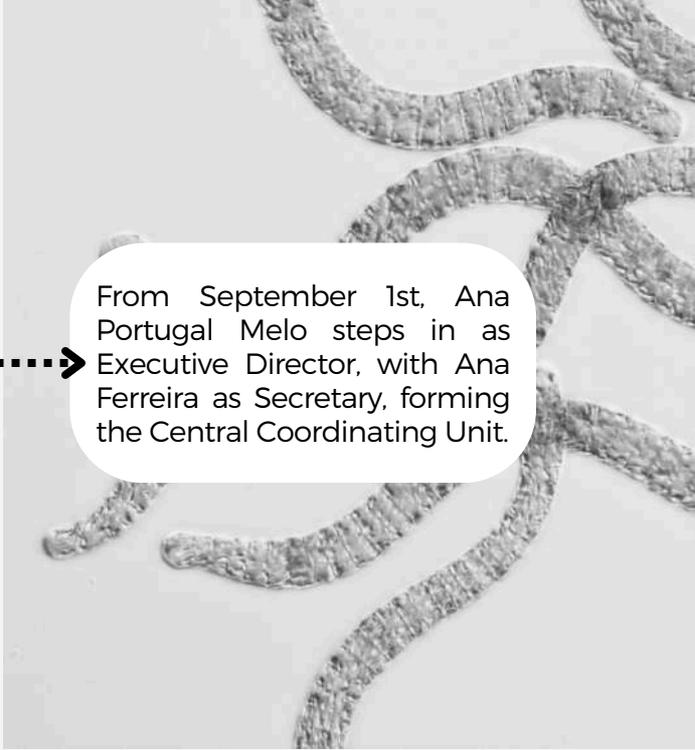


During the implementation period of project IS\_MIRRI21, Rosa Aznar from Spain served as the Chair of the Interim National Coordinators Forum (INCF), with Anna Kaczorowska from Poland as the Vice-Chair. Additionally, prospective members of MIRRI-ERIC, including Italy, Poland, Greece, The Netherlands, Russia and Romania, participated in this body during the interim phase.

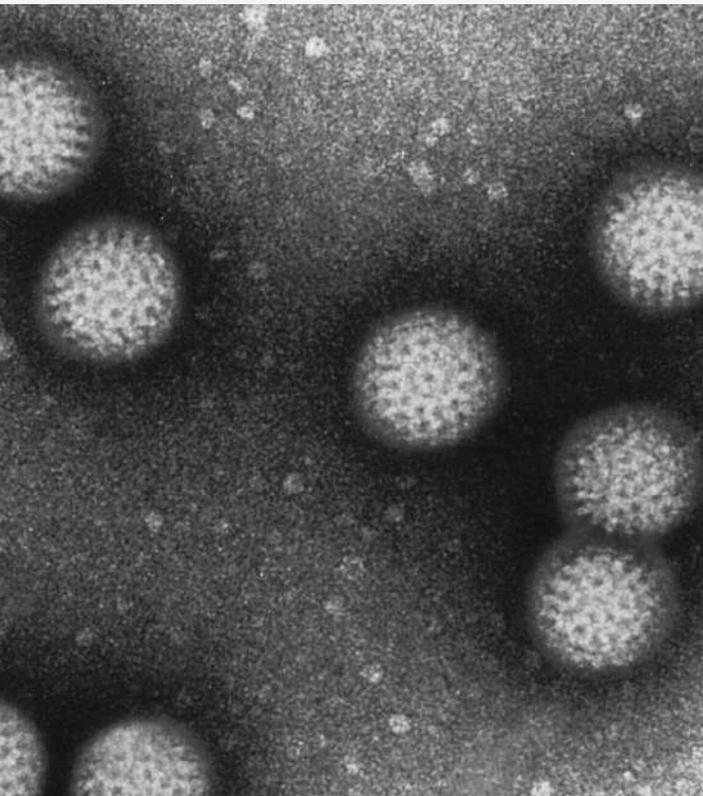
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## Interim Central Coordinating Unit

- Luís Soares - Interim Executive Director
- Ana João Ferreira - Secretary
- Bassem Kheireddine - Financial Manager
- Adriana Chiarelli - Access Officer



From September 1st, Ana Portugal Melo steps in as Executive Director, with Ana Ferreira as Secretary, forming the Central Coordinating Unit.

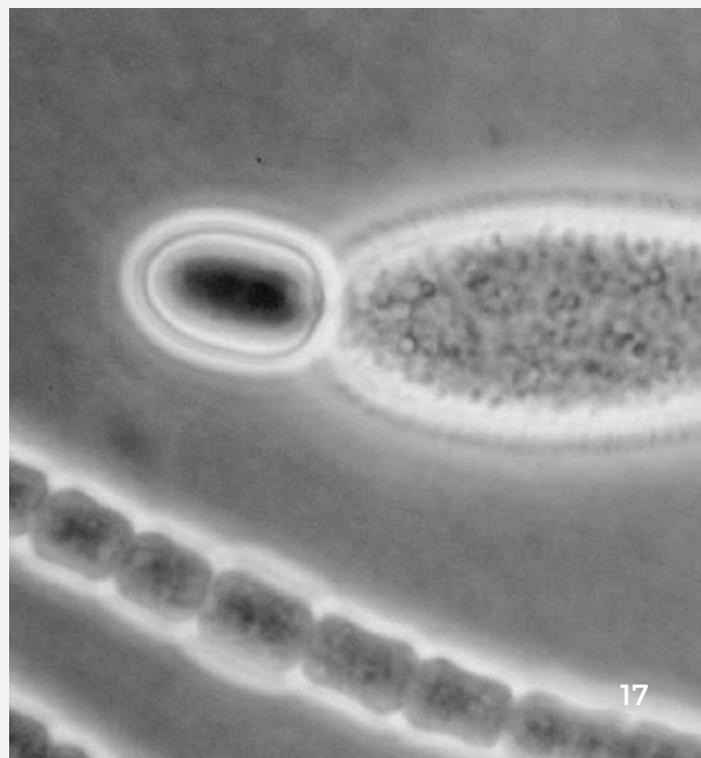


## Interim Advisory Board

- Eero Vuorio
- Lene Lange
- Manfred Ruthsatz
- Agnes Borg

## Interim Ethical Board

- Maria Luisa Lavitrano
- Haroun Shah
- Ana Sofia Carvalho
- Malcom Dando



# 5 MEMBERS

## Our Members and Partners

### MEMBERS:

EU Member States, associated countries, third countries other than associated countries and intergovernmental organisations may become a Member or an Observer of MIRRI-ERIC.

### PARTNERS:

'Partner' is a microbial research center (mBRC), an institution providing resources or services or participating in joint projects and common activities of MIRRI-ERIC.



### INRAE

- CIRM-CFBP - Plant associated bacteria collection
- CIRM-BIA - Food associated bacteria collection
- CIRM-BP - Pathogenic bacteria collection
- CIRM-CF - Filamentous fungi collection
- CIRM-Levures - Yeasts collection

### Institut Pasteur (IP)

- CRBIP-CNCM - National Collection of Microorganisms associated with patents
- CRBIP-CIP - Collection of bacteria of the Institut Pasteur
- CRBIP-CVIP - Collection of Viruses of the Institut Pasteur
- CRBIP-PCC - Collection of cyanobacteria of the Institut Pasteur

France is a founding member of MIRRI-ERIC, represented by two institutions: the National Research Institute for Agriculture, Food and Environment (INRAE) and the Institut Pasteur (IP). Within INRAE, the Microbiology and Food Chain Department (MICA) established the International Centre for Microbial Resources (CIRM), which collaborates with five microbiological resource centres (BRCs).

The Institut Pasteur hosts the CRBIP Biological Resource Center, a comprehensive biobank infrastructure encompassing collections of both microbial and human specimens.



**BCCM/DCG** - Diatoms Collection, Ghent University

**BCCM/GeneCorner** - Plasmid Collection, Ghent University

**BCCM/IHEM** - Fungi Collection: Human and Animal Health, Sciensano, Brussels

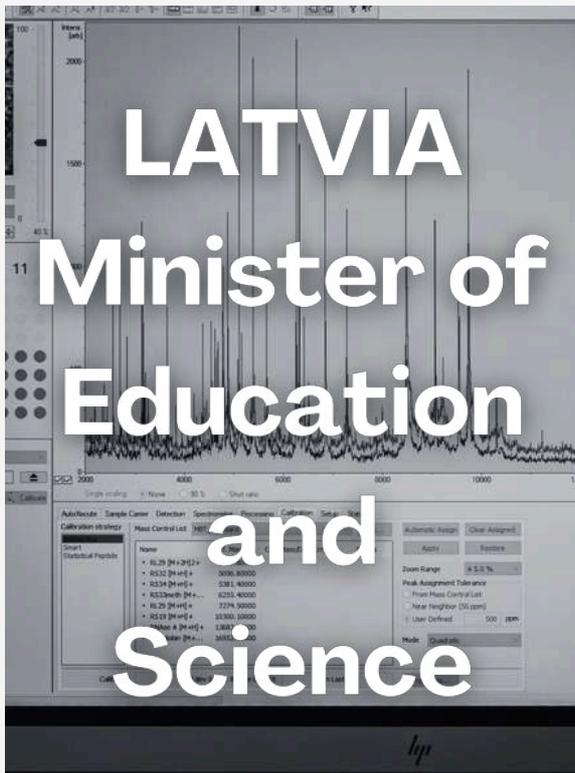
**BCCM/ITM** - Mycobacteria Collection, Institute of Tropical Medicine, Antwerp

**BCCM/MUCL** - Agro-food and Environmental Fungi Collection, Université catholique de Louvain

**BCCM/ULC** - Cyanobacteria Collection, University of Liège

**BCCM/LMG** - Bacteria Collection, University of Ghent

Belgium is a founding member of MIRRI-ERIC, with partner institutions integrated under the umbrella of the Belgian Coordinated Collections of Microorganisms (BCCM).



**MSCL** - Microbial Strain Collection of Latvia

MIRRI-ERIC Latvian node is represented by the Microbial Strain Collection of Latvia (MSCL). Majority of microbial strains preserved in MSCL have been isolated from samples collected in Latvia. MSCL furnishes microbial samples, accepts patent deposits as an international depository authority, and also accepts safe deposits.



# PORTUGAL

## Foundation for Science and Technology

**MUM** - Micoteca da Universidade do Minho, CEB/UMinho

**PYCC** - Portuguese Yeast Culture Collection, UCIBIO/UNLisboa

**ACOI** - Coimbra Culture Collection of Algae, UCoimbra

**LEGE-CC** - Blue Biotechnology and Ecotoxicology Culture Collection, CIIMAR/Uporto

**UCCCB** - University of Coimbra Bacteria Culture Collection

**CIMOCC** - Mountain Research Centre Culture Collection, CIMO/IPBragança

**AVFMCC/INIAV** - Agronomic, Veterinary and Food Microbial Culture Collections

**BIOTROP** - Biotropical Resources - GHTM-IHMT/Global Health and Tropical Medicine, UNLisboa

**CDB** - Collection of Department of Biology, CBMA/UMinho

**IVDP** - Institute of Douro and Porto Wines

**LRV** - Azores Regional Laboratory of Veterinary

Portugal hosts the statutory seat of MIRRI-ERIC, and hence is a founding member. The national node is the national research infrastructure MIRRI-PT, included in the National Roadmap of Research Infrastructures, and comprises eleven culture collections, described below, well geographically distributed.



**CECT** - Spanish Type Culture Collection

**BEA** - Spanish Bank of Algae

**ISCIII** - Instituto de Salud Carlos III

**Fundación MEDINA**

Spain is a founding member and shares with Portugal the MIRRI-ERIC Central Coordinating Unit, hosting the Collaborative Working Environment (CWE) Hub at the University of Valencia (UV). The node is integrated by four partners, the Ministry of Sciences and Innovation (MCIN) and LifeWatch-ERIC common facility in Spain (ICT CORE).



# 6 EU PROJECTS

Seven Contributions

During the prospective period of MIRRI-ERIC, organizations from member states actively engage in various projects under the umbrella of MIRRI. These projects encompass a spectrum of activities ranging from the implementation of research infrastructure to ongoing projects spanning diverse fields of microbiology.



## 1. IS\_MIRRI21

Implementation and sustainability of the Microbial Resource Research Infrastructure (MIRRI) for the 21st century.

The overarching goal of IS\_MIRRI21 was to establish MIRRI-ERIC as a **fully operational and sustainable entity**. Crucially, IS\_MIRRI21 was focused not only on the immediate implementation of MIRRI but also on securing its long-term sustainability.

With its creation as a legal entity (16 of June 2022), 2023 has been a rich and productive year for Partners of MIRRI-ERIC. The following activities have been performed especially through the participation in the project IS\_MIRRI21 and the deliverables finalised during the last year of the project by the different partners contained significant achievements and paved the way for the actual functioning of MIRRI-ERIC.

While the management of the global project was led by the Portuguese node, all founding Members participated in the different sections of the project with partners from prospective Members, making it difficult to distinguish their role from the countries non-Member of MIRRI yet. **Therefore, the outputs of IS\_MIRRI21 will be presented as a collective achievement.**

## 1.1. MIRRI-ERIC Organization

A first set of deliverables of the IS\_MIRRI21 project were aimed at planning and setting the functioning of MIRRI in the forthcoming years. An analysis released in deliverable “D3.3 - Final report on the deployment of consolidated Central Coordinating Unit organisational structure and its interaction with overall infrastructure” presents the consequence of two possible scenarios.



While the first scenario limited to the actual 5 funding members showed limited possibilities, a second more positive and realistic scenario including an increasing participation of prospective Members and higher incomes from grants, appeared a reasonable possibility given the actual success of the participation of MIRRI-ERIC to two EU calls (MICROBES-4-CLIMATE and EU LAC RESINFRA PUS). In line with this, the enlargement of MIRRI was studied and “D8.6 - Second report on the new prospect members in MIRRI-ERIC” analysed the possibilities of recruiting new prospective Members in MIRRI. In addition, to ensure the sustainability of MIRRI, deliverables “D9.2 - 5-year financial plan for MIRRI-ERIC” and “D9.3 - Business plan for MIRRI-ERIC” proposed a 5-year financial and a business plan for MIRRI-ERIC.

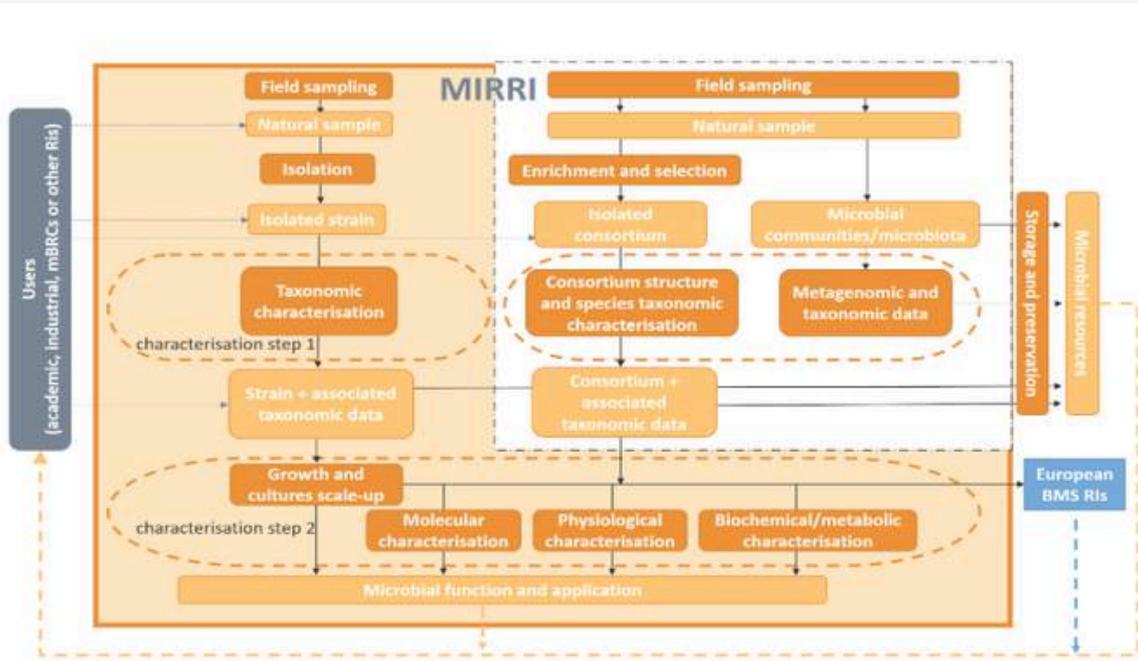
Last, the finalisation of the CWE described in “D6.4 - Report with the usability tests' results and user feedback”, enables MIRRI to display its microbial resources and services and interact with users.

## 1.2. MIRRI and the fulfilment of legal and normative constraints

Two other deliverables finalised in 2023 were aimed at helping mBRC to face legal and normative constraints. A first report evaluated the feasibility of the implementation of the new biobanking norm ISO 20387. BRCs having a certified ISO 9001 QMS, reach about 80 % of the requirements of this new norm, however, the cost of implementing all the requirements has to be considered. A second report evaluated the effect of implementing the MIRRI-ERIC Policy and Best Practice on ABS on trust and use of mBRC services by stakeholders (D3.5) and a third document proposed guidance for the implementation of biorisk management in MIRRI mBRCs.

### 1.3. MIRRI technical guidelines and cutting-edge technologies

Because MIRRI-ERIC was created from the clustering of multiples mBRC, it was necessary to harmonise key practices. A unique catalogue imposes the ability to provide resources offering similar confidence in their characterization, while different methods may have been implemented for this use in each mBRC. Because the characterization of microbial resources covers a large domain (figure 1), only guidelines for the taxonomic characterization have been proposed in “D2.2 - MIRRI common procedures and standards for strain characterization “, to ensure a similar taxonomic characterization.



**Figure:** Operational activities of culture collections: from field sampling to the delivery of high-quality biological resources with state-of-the-art associated (meta)data.

As microbiota and microbial communities are not included in today's activities of MIRRI, but will be very likely soon, this domain has been added as a white square with dashed lines.

However, given the continuous evolution of techniques, it was necessary to prepare MIRRI's partners for emerging technologies. In a survey sent during the project, most mBRCs highlighted the growing significance of microbiota preservation, whole genome sequencing, and MALDI-TOF-MS based identification. The two last topics have been those worked more intensively in 2023.

## a) MALDI-TOF-MS based identification

MALDI-TOF MS enables high throughput identification of numerous bacterial and fungal strains of several species, and has progressively spread into medical microbiology laboratories, and its wider use is limited by databases oriented for medical use mainly and the lack of genericity of tools offered by suppliers. A meeting held at Institut Pasteur in Paris from March 27 to 28, 2023 permitted a consensus for preliminary specifications for a collective MALDI-TOF MS database for MIRRI partners. The scheme of a new MALDI MS data analysis system was proposed as a foundation of the draft proposal of the MALDIBANK proposal.

## b) Genomic characterization of microbial strains

Whole Genome Sequencing is increasingly being adopted by mBRCs of MIRRI, especially those aligned with the health domain. Given that the sequencing of all microbial resources of the MIRRI catalogue is above what could be reached in the near future, an objective of providing at least one reference genome per species, has been agreed from the different meetings. The different discussion enabled to draw as well the draft of a genomic characterization project of MIRRI microbial resources, and contacts were made with the ERGA consortium for the characterization of Eukaryotes microbes.

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## 1.4. MIRRI services and workflows

IS\_MIRRI21 has also been a unique opportunity to evaluate how MIRRI can deliver its services, and to try to create new services. The TNA pilot program of IS\_MIRRI21 was an opportunity, and a review of the 2nd TNA call highlighted possible improvements to facilitate future programs (D4.3). This TNA call was also the opportunity to evaluate the possibility to create new services that result from joining several individual services together, either from MIRRI, or from other Research Infrastructures under the premise of offering users advanced services that foster international cooperation and researcher mobility.

### **Founded under:**

H2020-INFRADEV-2019-2

### **Grant Agreement ID:**

871129

### **Total Budget:**

€4.9M

### **Start/End dates:**

01 February 2020 – 31 July  
2023

### **Coordinated by:**

University of Minho

### **MIRRI-ERIC partners in the consortium:**

UMinho, UVEG, INRAE, IP,  
ULPGC, BELSPO and  
MSCL

### **Other MIRRI-ERIC prospective partners:**

KNAW-WI, IAFB-CCIM, NKUA, UNITO and VKM

## 2. HoloZcan



### Deep Learning Powered Holographic Microscopy for Biothreat Detection on Field

HoloZcan brings a new tool for security actors (police, relief workers, disaster managers, crisis managers, stakeholders responsible for public safety, critical infrastructure, and service providers) notably in the fields of autonomous detection and response capabilities.

The project will increase environmental and exhaled bio-aerosol sensing/measurement capability of CBRN practitioners by developing a high resolution, large throughput, automatic and highly portable detection system for making automatic classification of pathogens and particles.

**Founded under:**

HORIZON-INFRA-2022-TECH-01-01

**Grant Agreement ID:**

101094353

**Total Budget:**

€4.4M

**Start/End dates:**

1 May 2020 – 30 April 2024.

**Coordinated by:**

IDEAS SCIENCE KFT.

**MIRRI-ERIC partner in the consortium:**

Institut Pasteur.

## 3. ISIDORe



### Integrated Services for Infectious Disease Outbreak Research

The ISIDORe consortium, made of the capacities of European ESFRI infrastructures and coordinated networks, proposes to assemble the largest and most diverse research and service providing instrument to study infectious diseases in Europe, from structural biology to clinical trials. Giving scientists access to the whole extent of state-of-the-art facilities, cutting edge services, advanced equipment, and expertise, in an integrated way and with a common goal, will enable or accelerate the generation of new knowledge and intervention tools to ultimately help control SARS-CoV2 in particular, and epidemic prone pathogens in general, while avoiding fragmentation and duplication among European initiatives.

**Founded under:**

HORIZON-INFRA-2021-EMERGENCY-02

**Grant Agreement ID:**

101046133

**Total Budget:**

€21M

**Start/End dates:**

2 March 2022 – 1 March 2025

**Coordinated by:**

ERINHA

**MIRRI-ERIC partners in the consortium:**

Institut Pasteur  
MUM/UMinho

## 4. AgroServ



Integrated SERVICES supporting a sustainable AGROecological transition

The objective of the project is to provide access to innovative, customised and integrated research services to the European research communities to advance knowledge on agroecosystems, increase our understanding on the risks and threats due to global changes and foster the development of new agroecological practices, taking into account the socio-economics benefits for society, and the sustainability of rural communities.

**Founded under:**

HORIZON-INFRA-2021-SERV-01-03

**Grant Agreement ID:**

101058020

**Total Budget:**

€15M

**Start/End dates:**

1 September 2022 – 31 August 2027

**Coordinated by:**

AnaEE / CNRS

**MIRRI-ERIC partners in the consortium:**

BCCM-MUCL, CIRM-INRAE

## 5. canSERV



Providing cutting edge cancer research services across Europe

canSERV's mission is to make cutting-edge and customised research services available to the cancer research community EU-wide, enable innovative R&D projects and foster precision medicine for patients' benefit across Europe. By connecting, coordinating, and aligning existing oncology and complimentary RIs and providing services in a synergistic way transnationally, canSERV will capitalise on the critical mass of experts and cutting-edge services offered by canSERV's RIs and their extended network.

**Founded under:**

HORIZON-INFRA-2021-SERV-01-02

**Grant Agreement ID:**

101058620

**Total Budget:**

€14.9M

**Start/End dates:**

1 September 2022 – 31 August 2025

**Coordinated by:**

BBMRI-ERIC

**MIRRI-ERIC partners in the consortium:**

MUM/UMinho (+ACOI-UC +LEGE-CIIMAR).

## 6. BIOINDUSTRY 4.0

RI services to promote deep digitalization of Industrial Biotechnology - towards smart biomanufacturing



BIOINDUSTRY 4.0 aims at encouraging the adoption of advanced digital technologies in industrial biotechnology. These include innovative measurement devices for online monitoring, data management tools for data quality, open science, and Artificial Intelligence learning to support bioprocess design.

**Founded under:**

HORIZON-INFRA-2022-  
TECH-01-01

**Grant Agreement ID:**

101094287

**Total Budget:**

€10M

**Start/End dates:**

2 January 2023 – 31  
December 2027

**Coordinated by:**

EU-IBISBA / INRAE

**MIRRI-ERIC partners in  
the consortium:**

UVEG, WI-KNAW

## 7. MICROBE - MICRObiome Biobanking (RI) Enabler



MICROBE aims at delivering innovative validated technological approaches and other solutions that will enable to preserve and provide access to microbiome samples and associated data, as well as to ensure widespread uptake in microbiome research communities and thus support the development of novel microbiome-based applications.

**Founded under:**

HORIZON-INFRA-2022-  
TECH-01-01

**Grant Agreement ID:**

101094353

**Total Budget:**

€5.8M

**Start/End dates:**

1 February 2023 – 31  
January 2027

**Coordinated by:**

AIT

**MIRRI-ERIC partners in  
the consortium:**

CIRM-INRAE

7

# TRAINING + EVENTS



**CROSS-BOARDER  
PRESENCE**

**MIRRI** MICROBIAL ERIC  
RESEARCH INFRASTRUCTURE  
EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM

## Workshop on Quality Management - under the IS\_MIRRI21 Project

The workshop consisted of two sessions, each focusing on different aspects of operational excellence and compliance within research infrastructures. The participants explored the role of standards in improving operations and ensuring compliance with both user and legal requirements. Various experiences with different standards were shared, highlighting their importance in meeting user demands and legal obligations alike.

In the second session, discussions centered around multi-site quality management systems in accordance with ISO9001. Presentations also addressed the integration of multiple standards within organizations and strategies for implementing quality management in decentralized research infrastructures.

### Organisers:

- MUM - Micoteca da Universidade do Minho
- CEB/UMinho
- BCCM - Belgian Coordinated Collections of Microorganisms
- CECT - Spanish Type Culture Collection

### Number of participants:

70

## ICCC15 - International Conference on Culture Collections 2023

### Organisers:

- MIRRI-PT (MUM)
- UFRO
- IS\_MIRRI21
- SPBT

### Number of participants:

150



## WHAT ELSE

**03.05.2023**

MIRRI-FR (IP) as a speaker at ISBER's 2023 Annual Meeting & Exhibits



**SEATTLE, USA**

**04.06.2023**

MIRRI-SP (UVEG-CECT) as a speaker at European Research Infrastructures in Biomedical Sciences Day

**05.06.2023 - 08.06.2023**

MIRRI-FR (INAE) as a speaker at 8th conference on Physiology of Yeast & Filamentous Fungi (PYFF)



**CORK, IRELAND**

**27.06.2023 - 29.06.2023**

MIRRI-LV (MSCL) as a speaker at 5th World Congress of Latvian Scientists "Research Latvia"



**RIGA, LATVIA**

MIRRI-FR (IP) as a speaker at Master in Biobanking of the ESTBB, Université Catholique de Lyon, France



**LYON, FRANCE**

**20.08.2023 - 26.08.2023**

MIRRI-FR as a speaker at 8th European Phycological Congress 2023 - "Scientific Opportunities for a Global Algal Revolution"



**BRITTANY, FRANCE**

**19.09.2023 - 22.09.2023**

MIRRI-BE as a speaker at ECCO XLI 2023



**BRUSSELS, BELGIUM**

**25.09.2023 - 26.09.2023**

MIRRI-ERIC as an attendee at Global dimension and Sustainability challenges of Research Infrastructures



**TENERIFE, SPAIN**

**05.12.2023**

MIRRI-ERIC as an attendee at 10 year Anniversary 2023 Elixir



**BRUSSELS, BELGIUM**



# COUNTRY FOCUS

8

National Nodes

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## 8.1. MIRRI-BELGIUM

### LOOKING FORWARD

The primary focus of BCCM is to ensure the beneficial integration of BCCM as the Belgian node within MIRRI-ERIC, a crucial step in fostering collaboration and coordination within the European microbial resource research landscape. This integration entails providing comprehensive catalogue information to facilitate seamless access to microbial resources. Additionally, there is a concerted effort to follow up on literature to effectively valorise strains within MIRRI.

Clear communication regarding BCCM's services and expertise is paramount to ensure stakeholders are well-informed. This includes outlining various projects such as AgroServ and Microbes4Climate, which aim to address agricultural and climate-related challenges through microbial research.

Furthermore, BCCM is actively involved in new projects such as INFRATECH-MALDIBANK and INFRATECH-ADVITAM, alongside the initiation of FWO-IRI, although the call has been postponed. An essential aspect of BCCM's operation involves formulating policies, including those related to Access and Benefit Sharing (ABS).

BCCM also emphasizes the sharing of expertise, exemplified by initiatives like MALDI-TOF MS. Moreover, aligning with Belgian nodes of other infrastructures such as BBMRI, EMBRC, ELIXIR, and ERINHA facilitates synergies and enhances the overall research ecosystem.

In addition, BCCM appoints a liaison representative to ISO/TC 276, ensuring alignment with international standards. Finally, BCCM provides advisory services encompassing legal and quality aspects, in line with initiatives like IS\_MIRRI21.

### HIGHLIGHTS

The combined expertise of national nodes within MIRRI renders it an exceedingly attractive partner for collaborative projects. With a diverse range of expertise spanning various domains such as agriculture, energy, health, and beyond, the broad knowledge base of these national nodes enriches the consortium's capabilities and potential for impactful research endeavours.

Moreover, MIRRI serves as a one-stop shop for microbial materials and services, providing seamless access to a comprehensive array of resources and support. This centralised approach streamlines the research process, facilitating efficient collaboration and innovation within the microbial research community.



## TEAM

**INSTITUTION BCCM/DCG :** Wim Vyverman, Peter Chaerle

**INSTITUTION BCCM/ITM:** Leen Rigouts

**INSTITUTION BCCM/GENECORNER:** Rudi Beyaert, Martine Vanhoucke

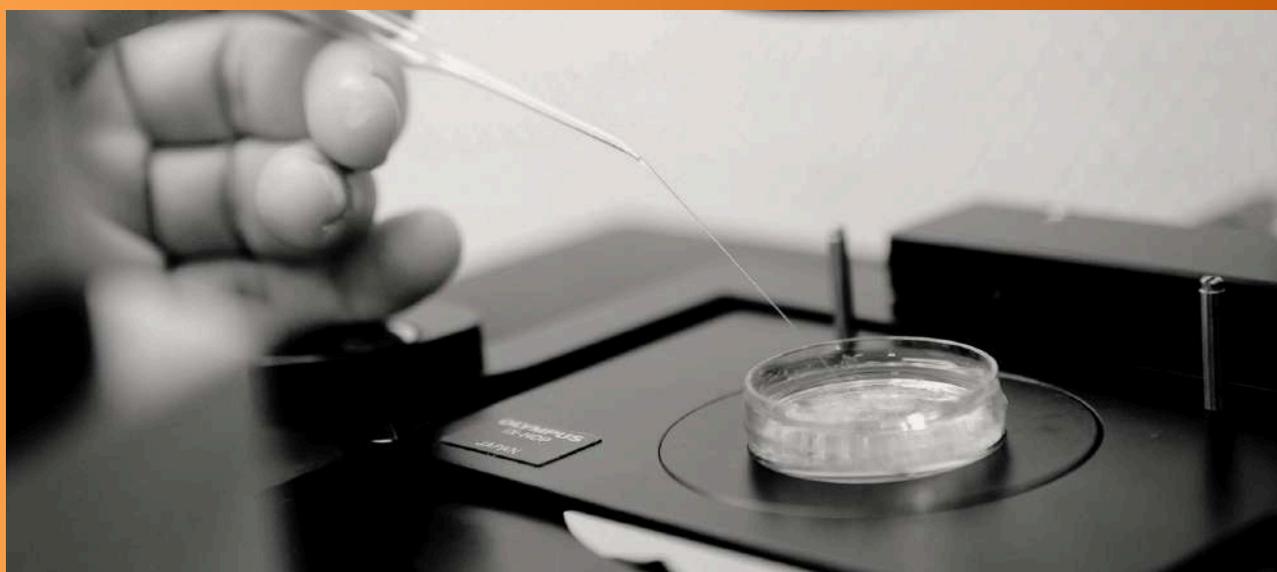
**INSTITUTION BCCM/UCL:** Annick Wilmotte, Luc Cornet

**INSTITUTION BCCM/IHEM:** Ann Packeu, Pierre Becker

**INSTITUTION BCCM/LMG:** Peter Vandamme, Ann Hellemans

**INSTITUTION MUCL:** Stéphane Declerck, Heide-Marie Daniel

**INSTITUTION BCCM/CC:** Marleen Bosschaerts, Vincent Van de Perre, Virginie Storms, Zayid Benyahia, Philippe Desmeth, Philippe Deleu, Anne Depauw



## INTERNATIONAL PROJECTS

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### Name of the project: **IS\_MIRRI21**

- **Participant organisation:**

- BELSPO
- Sciensano
- ULiège
- UCL

- **Budget attributed to the Node:**

646260€

*(budget foreseen in contract)*

- **Achievement - Services delivered:**

- Redaction of the common procedures and standards for strain characterization for the Cyanobacteria.
- BELSPO drafted a checklist, in collaboration with BBMRI-ERIC. The checklist comprised the requirements of the ISO 20387:2028 standard that have been translated into 354 questions, which are grouped under five topics: QMS requirements, Risks, opportunities for improvements, non-conformities, internal audits, Operations (process requirements), Resources, Organisation. Each of the six selected mBRCs was audited according to this checklist. A pool of three auditors was formed (auditors from BELSPO, KNAW-WI and MUM).

### Name of the project: **AgroServ**

- **Participant organisation:**

- UCL

- **Budget attributed to the Node:**

287590,53€

*(budget foreseen in contract)*

### Collaborations with National Nodes of RIs:

- RI: BBMRI-ERIC & BBMRI.be
- ELIXIR.be (initial contacts)
- EMBRC

## 8.2. MIRRI-FRANCE

### LOOKING FORWARD

The immediate objective entails securing a formal agreement between INRAE and Institut Pasteur for the establishment of the French node. Subsequently, the next phase involves submitting an application to be included in the French infrastructure roadmap for Biology and Health. Lastly, preparations for the MALDIBANK project will be addressed.

### HIGHLIGHTS

#### **Participation in the successful implementation of MIRRI-ERIC**

Significant contributions to the successful implementation of MIRRI-ERIC were made, largely attributed to the IS\_MIRRI21 project. Notably, French partners assumed leadership roles in three out of nine work packages. IS\_MIRRI21, dedicated to the implementation of MIRRI ERIC, was executed throughout the year 2023.

#### **Workshop on MALDI-TOF MS organised by the French node**

A highly successful workshop on MALDI-TOF MS, orchestrated by the French national node, culminated in the formulation of a draft grant proposal. Subsequently, this proposal underwent further refinement and was subsequently submitted in March 2024 as the INFRA-TECH project.

#### **Clarification on the implementation of the Nagoya Protocol in France**

The Partners of the French national node joined forces to publish an article together in the International Journal of Systematic and Evolutionary Microbiology to clarify the application of the Nagoya Protocol and the Access and Benefit Sharing (ABS) system in France, which we hope will help researchers, biobanks, industrials and policy makers to better understand the French ABS system.

### Core Services

Strain Distribution and Preservation

### International Projects

- IS\_MIRRI21 (IP, INRAE)
- ISIDORE (IP)
- HoloZcan (IP)
- MICROBE (INRAE)
- AgroServ (INRAE)
- EOOSC-Life (INRAE)

### Collaborations

- **AGROSERV** : ANAE - INRAE - IBISBA
- **MICROBE** : MIRRI-FR INRAE, CABI, DSMZ

### Publication:

*Margolis I., et al., 2023: Microbial Resource Research Infrastructure for the 21st Century: usability analysis of the Collaborative Working Environment. AHFE Open Access, vol 110. AHFE International, USA. <http://doi.org/10.54941/ahfe1003176>*

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## IMPACT NARRATIVE

In 2023, the primary contributions of the French node encompassed active engagement in IS-MIRRI21, facilitating the establishment of MIRRI-ERIC. Additionally, the node made notable contributions to various EU projects such as EOOSC-Life and ISIDORE. Moreover, directors from Biological Resource Centers (BRCs) participated in two key meetings: PYFF in Cork and ISBER in Seattle, where they played a pivotal role in advocating for and promoting MIRRI-ERIC.

The primary impact of MIRRI-ERIC has been its facilitation of our participation in significant infrastructure projects such as MICROBE and Microbes4Climate. Furthermore, it provided valuable training opportunities in Quality at the International Culture Collection Consortium (ICCC). Additionally, MIRRI-ERIC has fostered enhanced interactions with European partners, thereby facilitating the exchange of expertise and fostering collaborative efforts.

The CIRM coordinator and IP team have participated to biobanking related Master courses, to publicise MIRRI-ERIC (Univ Lyon, Univ Nice).

The French NN participated to different activities at national and international level where MIRRI-ERIC was presented/advertised. We can mention the teaching activities at biobanking Master courses at the Catholic University of Lyon and University of Nice; the presentation of MIRRI-ERIC in the ISBER (International Society for Biological and Environmental Repositories) Annual meeting at Seattle; [to complete, from IP is all for 2023.

## 8.3. MIRRI-LATVIA

### LOOKING FORWARD

MIRRI-ERIC's Latvian node is represented by the Microbial Strain Collection of Latvia at the University of Latvia (MSCL-UL). However, in a significant development anticipated for 2024, the Latvian node will undergo expansion with the inclusion of the Institute of Food Safety, Animal Health, and Environment (BIOR) into MIRRI-ERIC-LV. This expansion marks a pivotal moment for the Latvian node, as it broadens its expertise and resources, thereby enhancing its capacity to contribute to MIRRI-ERIC's objectives.



### HIGHLIGHTS

#### **MIRRI-ERIC promotes the visibility of small partners**

MIRRI-ERIC plays a crucial role in promoting the visibility of small partners within the microbial research community. By facilitating international collaboration, MIRRI-ERIC provides smaller institutions, such as the Microbial Strain Collection of Latvia at the University of Latvia (MSCL-UL), with invaluable opportunities to participate in large-scale projects that they might not have access to otherwise. Recently, MSCL-UL has been approached for participation in several international project applications, underscoring the significance of MIRRI-ERIC in amplifying the reach and impact of smaller partners.

#### **MIRRI-ERIC widens knowledge base of partners**

Furthermore, MIRRI-ERIC serves as a platform for widening the knowledge base of its partners. As a small microbial culture collection, MSCL-UL acknowledges its limited scientific capacity and expertise. However, by being a part of MIRRI-ERIC, MSCL-UL gains access to a vast network of experts from other partner institutions. This collaboration enables MSCL-UL to consult with specialists across various fields, thereby expanding its knowledge base and enhancing its research capabilities.

#### **Core Services**

**Name:** Storage and distribution of microorganisms

**Responsible institution:** MSCL-UL

**Website:** mikro.daba.lv

#### **Team**

**Name:** Daina Eze

**Institution:** MSCL-UL

**Country:** Latvia



## NATIONAL PROJECTS

- **lzp-2022/1-0599:** Innovative anti-inflammatory and antipathogenic systems based on proanthocyanidins isolated from fruit shrubs agricultural lignocellulosic waste.
  - **lzp-2019/1-0005:** Injectable in situ self-crosslinking composite hydrogels for bone tissue regeneration (iBone).
- 

## IMPACT NARRATIVE

*Trichoderma viride* MSCL 845 was deposited in MSCL as a microorganism isolated from samples collected from a mediaeval mural of an architectural monument Melngalvja nams in Riga in 2000.

In 2022 MSCL received a request from a company aiming at a production of biocontrol agents for the agricultural sector. Considering the specific requirements for the production of biocontrol products for use in cold climates, the company was interested in *Trichoderma* strains with increased psychrophilicity.

Phenotypic screen of *Trichoderma* strains from MSCL identified MSCL 845 as a particularly psychrophilic and antagonistic strain, thus matching the needs of the user. MSCL 797 was initially deposited in MSCL as a host of previously uncharacterized bacteriophage. The deposited strain was initially identified as *Enterobacter cancerogenus* using biochemical identification with the BD BBL Crystal Enteric/Nonfermenter Identification System.

With an increased role of sequence based identification of accessions, MSCL revisited the preserved strain MSCL 797 and obtained 16S rRNA sequence information suggesting that the strain actually belongs to *Hafnia alvei*. 16S rRNA results were subsequently corroborated by *rpoB* sequence. This example underscores the importance of introduction of sequence based identification in routine microbial culture collections.



## 8.4. MIRRI-SPAIN

### LOOKING FORWARD

The Spanish Node of MIRRI-ERIC is poised to advance its mission and expand its impact through strategic initiatives. By actively participating in activities spearheaded by the Spanish Joint Group on health-related research Infrastructures, under the coordination of the esteemed Institute of Health Carlos III (ISCIII), the Node aims to foster collaboration and synergy within the national research landscape.



Furthermore, the Node is committed to seeking out funding opportunities at both the national and European levels. By proactively pursuing funding avenues, the Spanish Node seeks to secure essential resources to support its research endeavors and drive innovation within the consortium.

Additionally, the Spanish Node is dedicated to enhancing its capabilities and expertise by integrating new partners into its network. This strategic approach ensures the continuous growth and dynamism of the Node, harnessing the diverse talents and resources of emerging institutions to further enrich the MIRRI-ERIC consortium's collective efforts in advancing microbial research and innovation.

Participate in the activities developed by the Spanish Joint Group on health-related research Infrastructures, coordinated by the Institute of Health Carlos III (ISCIII) Search for funding opportunities at national and European level Integrate new partners in the Spanish Node.

### HIGHLIGHTS

#### **Constitution of the working groups on cutting-edge technologies: whole genome sequencing (WGS), microbiota preservation, and MALDI-TOF MS analysis.**

These working groups, focusing on whole genome sequencing (WGS), microbiota preservation, and MALDI-TOF MS analysis, represent a concerted effort to leverage emerging technologies for the benefit of MIRRI, its partner organizations, and most importantly, its users.

The shared aim of these working groups is to shape MIRRI's strategy regarding the acquisition, efficient utilization, and development of opportunities presented by these new technologies and solutions. By pooling expertise and resources, these groups aim to enhance MIRRI's capabilities and offerings in line with the evolving needs of the research community.

Of particular note is the European proposal within the MALDI-TOF MS analysis working group, which seeks to improve the speed and accuracy of microorganism identification and characterization. This initiative reflects MIRRI's commitment to driving innovation and advancing scientific knowledge in microbial research on a European scale.



## Enhancing the collaboration among RIs

In 2023, MIRRI-ERIC made significant strides in enhancing collaboration with other Research Infrastructures (RIs), both within Europe and across Latin American countries. This concerted effort culminated in the successful preparation and subsequent selection for funding of two new Horizon Europe proposals.

The first of these proposals, Microbel-4-Climate, underscores MIRRI-ERIC's commitment to addressing pressing global challenges, particularly in the realm of climate change. By leveraging microbial resources and expertise, this project aims to advance understanding and develop innovative solutions to mitigate climate-related issues.

Similarly, the EU-LAC ResINFRA Plus project represents a milestone in fostering collaboration between Europe and Latin American countries. Through this initiative, MIRRI-ERIC seeks to strengthen research infrastructures in Latin America, facilitating knowledge exchange and capacity-building efforts across continents.

### CORE SERVICE

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**Name:** Provision of microbial resources and services related with identification and characterization of microorganisms

**Description of the service:**

Diverse applications;  
Taxonomy; research on the development of new probiotics,  
biofertilizers/biocontrol strains;  
production of protein, etc.

**Responsible institution:**

UVEG-CECT

**Website:**

<https://www.uv.es/cect>

**Name:** Access to biological material

**Description of the service:**

ULPGC-BEA

**Responsible institution:**

Access to the biological material of the culture collection of microalgae and cyanobacteria for research purposes

**Website:**

<https://marinebiotechnology.org/es>

### TEAM AND INSTITUTION

#### UVEG-CECT

- Aurora Zuzuarregui
- José Miguel López-Coronado
- Rosa Aznar
- Susan Alokozay

#### ULPGC-BEA

- Antera Martel Quintana
- Carlos Almeida
- Ignacio González Bonilla

## INTERNATIONAL PROJECTS

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### Name of the project: **IS\_MIRRI21**

- **Participant organisation:**

- UVEG-CECT
- ULPGC-BEA

- **Budget attributed to the Node:**

113 K€  
(2023)

678 K€  
(Total)

- **Achievement:**

- Services delivered: CWE ([www.mirri.org](http://www.mirri.org)), including catalogue of microbial resources and data, catalogue of services related with the characterization and use of microbial resources, catalogue of training courses related with the use of microbial resources, forums and working groups of experts. TNA pilot programme

- **Publications:**

- Margolis, I., Rodrigo-Torres, L., Mackay, A., Faria, A., Poli, A., Almeida, L., Prigione, V., Vara, A., Chiarelli, A., Soares, L., Aznar, R., Sousa, E. (2023). Microbial Resource Research Infrastructure for the 21st Century: usability analysis of the Collaborative Working Environment. In: Tareq Ahram and Christianne Falcão (eds) Usability and User Experience. AHFE (2023) International Conference. AHFE Open Access, vol 110. AHFE International, USA. <http://doi.org/10.54941/ahfe1003176>

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### Name of the project: **EOSC-Life**

- **Participant organisation:**

- UVEG-CECT

- **Budget attributed to the Node:**

7 K€  
(2023)

62,5 K€  
(Total)

- **Achievement:**

- Services delivered: The project co-created and integrated the federated core of the European Open Science Cloud (EOSC) and furthered its development while creating, adapting, and adopting policies that support Open Science. It also strengthened the connection between RIs and the EOSC by increasing FAIR and open data sharing and data availability.

- **Publications:**

- Romano, P.; Aznar, R.; López Coronado, J. et al. (2023). Microbial resources in the European Open Science Cloud: MIRRI contribution to the EOSC-Life project (Poster, Version 0) <https://doi.org/10.5281/zenodo.8052706>
- David, R.; Richard, A.; Connellan, C. et al. (2023). Umbrella Data Management Plans to Integrate FAIR Data: Lessons from the ISIDORE and BY-COVID Consortia for Pandemic Preparedness. (Data Science Journal preprint). <https://doi.org/10.5281/zenodo.7520086>

**Name of the project: Bioindustry 4.0**

• **Participant organisation:**

- UVEG-CECT

• **Budget attributed to the Node:**

49 K€

(2023)

197 K€

(Total)

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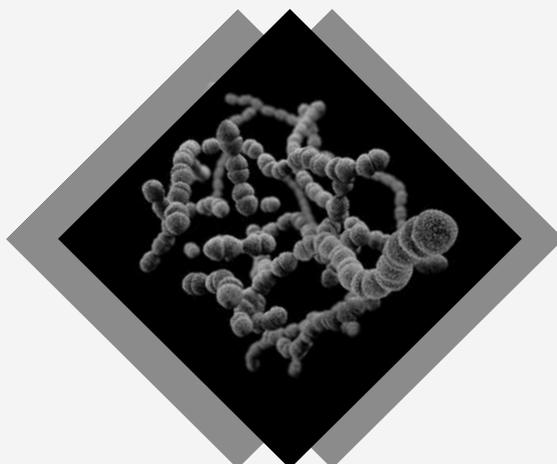
**IMPACT NARRATIVE**

The node has been actively engaged in collaborative efforts within Spain's research community, notably through its participation in the Spanish Joint Group on health-related Research Infrastructures, coordinated by Institute of Health Carlos III (ISCIII). Additionally, the node has initiated contact with several research institutions in Spain specializing in microbial resources. The primary objective of these outreach efforts is to raise awareness about MIRRI activities and to expand the National Node.

As a testament to the effectiveness of these endeavors, the node has received three requests for adherence, which are currently under evaluation.

The primary impact of MIRRI-ERIC activities within the node is the invaluable opportunity to participate in EU INFRA projects. This not only brings in sources of income but also fosters new collaborations with other Research Infrastructures (RIs) and institutions, both nationally and internationally. Through these collaborative projects, the node can leverage its expertise and resources to address pressing scientific challenges and contribute to groundbreaking research initiatives on a European scale. Furthermore, participation in MIRRI-ERIC serves as a prestigious label of excellence for the hosting institution, the University of Valencia (UV), and for the country as a whole.

Although it is still too early to evaluate the impact in the Spanish Research Community, we believe that MIRRI impacts on the quality control and distribution of microorganisms for research and industrial applications, with a particular emphasis on the ABS policy. This involves establishing standardized methodologies, building connections, and securing new partnerships with laboratories and collections.



## 8.5. MIRRI-PORTUGAL

**04.07.2023 - 05.07.2023**

Workshop at the European Marine Biological Resources Centre Biobank - EBB Workshop and Final Meeting organized by the European Marine Biological Resource Centre Biobank (EBB)

Presentation: MIRRI : approach to Nagoya, tools and services for biobanks



**OPORTO, PORTUGAL**

**27.09.2023**

Meeting at the SIMBA Consortium Meeting organized by SIMBA Consortium

Presentation: Unlocking the Potential: Exploring the Vital Role of MIRRI-ERIC in Microbial Resource Research and Conservation



**COPENHAGEN, DENMARK**

**04.10.2023 - 05.10.2023**

Course at the Coleções de Culturas Microbianas: Construção, Gerenciamento e Desafios Atuais organized by MUM and ESALQ

Presentation: Apresentação da Infraestrutura Europeia para os Recursos Microbianos: evolução do trabalho de “network de networks” para a integração legal e operacional das coleções europeias; Casos de estudo: O catálogo da MIRRI-ERIC



**UNIVERSITY OF SÃO PAULO - ESALQ, BRAZIL**

**27.10.2023**

Congress at 2nd Microbiome PT Summit organized by BioData.pt, ELIXIR Portugal, and SymbNET

Presentation: How does MIRRI boost the microbiome era?



**LISBON, PORTUGAL**

03.11.2023

Congress at World Data Centre for Microorganisms (WDCM) Annual Meeting 2023 organized by WDCM

Presentation: "MIRRI - Microbial Resource Research Infrastructure : a European legal entity that offers integrated services for user communities."



**SHENZHEN, CHINA**

07.12.2023 - 09.12.2023

Congress at MicroBiotec'23 organized by UBI

Presentation: Comprehensive overview of the impactful activities and pioneering projects undertaken by the MIRRI-PT node



**COVILHÃ, PORTUGAL**

- **Publications:**

- The Micoteca da Universidade do Minho - MUM has released the ICC15 Abstracts Book (ISBN 978-972-97916-6-6), featuring highlights and a comprehensive compilation of cutting-edge research and insights shared during the event.

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## 2nd Microbiome PT Summit

In **Session V: Microbiomes in the Environment**, Professor Lima delivered a captivating presentation titled "How does MIRRI boost the microbiome era?"

MicroBiotec'23 Congress - overview of the impactful activities and pioneering projects undertaken by the MIRRI-PT node

A significant highlight of the event was a presentation by Professor Nelson Lima, the Micoteca da Universidade do Minho - MUM who spoke on the topic of "MIRRI - Microbial Resource Research Infrastructure : a European legal entity that offers integrated services for user communities." - 20 countries participated in the meeting.

# 9 INDICATORS TO MEASURE THE IMPACT OF MIRRI-ERIC



Capture of the preliminary indicators at the inicial state of the National Nodes organization



# II

## II.1. NUMBER OF **USER REQUESTS** FOR ACCESS TO BIOLOGICAL MATERIAL

FRANCE	SPAIN
136 units	1174 units

## II.2. NUMBER OF **SAMPLES** OF BIOLOGICAL MATERIAL DISTRIBUTED

FRANCE	SPAIN
2293 units	3955 units

## II.3. NUMBER OF **REQUESTS/PROPOSALS** FOR ACCESS TO SERVICES

FRANCE	SPAIN
42 units	208 units

## II.4. NUMBER OF **GRANTED PROPOSALS** FOR ACCESS TO SERVICES

FRANCE	SPAIN
136 units	146 units

# I1

I1.5. NUMBER OF **USER REQUESTS/PROPOSALS** FOR ACCESS TO FACILITIES

SPAIN
2

I1.6. NUMBER OF **GRANTED PROPOSALS** FOR ACCESS TO FACILITIES

BELGIUM
3

I1.7. NUMBER OF **PUBLICATIONS** BASED ON RESEARCH PERFORMED USING FACILITIES/RESOURCES OF THE RI

FRANCE	SPAIN
21	62
<small>Strains' citations: 373; Publications citing MIRRI: 1</small>	

# I2

I2.1. THE TOTAL NUMBER OF **PERSON-HOURS** FOR WHICH PEOPLE HAVE MADE USE OF TRAINING OPPORTUNITIES PROVIDED BY MIRRI-ERIC

FRANCE	SPAIN
18	604

## I2.2. NUMBER OF PEOPLE THAT HAVE MADE USE OF THE TRAINING OPPORTUNITIES PROVIDED BY MIRRI-ERIC

FRANCE	SPAIN
<ul style="list-style-type: none"> <li>• 6 people from MIRRI-ERIC</li> <li>• 6 people in Academia external to MIRRI-ERIC</li> </ul>	<ul style="list-style-type: none"> <li>• 4 people in Academia external to MIRRI-ERIC</li> <li>• 25 people in Industry external to MIRRI-ERIC</li> <li>• 4 people in others, external to MIRRI-ERIC</li> </ul>

## I3

### I3.1. NUMBER OF MEMBERS OF THE RI FROM EU COUNTRIES

5 Member States

### I3.2. NUMBER OF PARTNERS THAT ARE PART OF MIRRI-ERIC

- Belgium: 7
- France: 8
- Latvia: 1
- Spain: 2
- Portugal: 11

## I4

### I4.1. SHARE OF USERS ASSOCIATED WITH INDUSTRY

NUMBER OF UNITS
<ul style="list-style-type: none"> <li>• France: 39%</li> <li>• Spain : 50%</li> </ul>

### I4.2. NUMBER OF CONTRACTS/ PROJECTS WITH THE INDUSTRY

NUMBER OF UNITS
<ul style="list-style-type: none"> <li>• France: 215</li> <li>• Spain: 2</li> </ul>

# I5

## I5. **OUTREACH VIA SOCIAL MEDIA**



# I6

## I6. **NUMBER OF CATALOGUE RECORDS MADE AVAILABLE IN MIRRI-ERIC CATALOGUE OF BIOLOGICAL RESOURCES**

FRANCE	SPAIN
14198	8575

# I7

## I7. NUMBER OF PARTICIPATIONS OF MIRRI-ERIC IN POLICY-RELATED WORKING GROUPS, COMMITTEES AND ADVISORY BOARDS

### FRANCE - 27 PARTICIPATIONS

#### Including

- Member of drafting committee ISBER
- Best Practices 5th edition
- Governing Board of the ISIDORe project
- Member of the DSI Scientific Network (Digital Sequence Information Scientific Network)
- Member of international Scientific Advisory Board of AgroBRC-RARe (French national research infrastructure (RI))
- Subcommittee on the Taxonomy of Phototrophic Bacteria Member in ISO TC276, ISO TC334
- Member of ISBER Biospecimen Science Working Group
- MIRRI ERIC general assembly
- MIRRI ERIC national coordinator forum
- Participation to the board of the French Infrastructure : AgroBRC : RARe and participation to 5 working groups ( ABS, Communication, IT, Sustainability, Quality management)
- ECCO Board - Collections Officer
- IDAs working group - Budapest
- Treaty Forum - WIPO

### SPAIN - 6 PARTICIPATIONS

#### About it

- MIRRI-ERIC AoM and NCF: participation in **all meetings**
- MIRRI-ERIC WGs (microbiota, WGS, MALDI-TOF): participation in **most meetings**
- SAB-RARe ([https://www.agrobrc-rare.org/internet6\\_national\\_agrobrc\\_rare-eng](https://www.agrobrc-rare.org/internet6_national_agrobrc_rare-eng)): **1 participation**
- LS RI strategy Board (<https://lifescience-ri.eu/home.html>): **3 participations**
- WG CTN 34/SC4/ GT6 (Spanish Standardisation Committee on Microbiology of the Food Chain) (<https://www.en.une.org/encuentra-tu-norma/comites-tecnicos-de-normalizacion/comite?c=CTN+34/SC+4/GT+6>): **2 participations**

### BELGIUM

- Participation to WG 2 ISO/TC 276 (liaison representative) - Advisory board BBMRI.be

# I8

## I8.1. SHARE OF **USERS (%)** OF NON-EU MEMBER COUNTRIES

SPAIN
< 10%

## I8.2. SHARE OF **TRAINEES (%)** FROM NON-EU MEMBER COUNTRIES

SPAIN
< 5%

# I9

## I9.1. **SOURCES OF REVENUES AND THEIR RESPECTIVE CONTRIBUTIONS TO INVESTMENTS AND OPERATIONAL COSTS**

SPAIN
<ul style="list-style-type: none"><li>• 606 K€ in services and training</li><li>• 551 K€ in projects</li><li>• In others: n.d.</li></ul>



**MIRRI** MICROBIAL ERIC  
RESEARCH INFRASTRUCTURE

EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM

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# FINANCIAL STATEMENT

## STATEMENT - INDIVIDUAL RESULTS

(Amount in Euros)

	<b>31st December 2023</b>
Sales and Services Rendered	113.400
Supplies and External Services	- 6.719
Personnel Expenses	- 42.521
<b>Result before depreciations, financing expenses, and taxes</b>	<b>64.160</b>
Depreciation and amortisation expenses/reversals	- 63
<b>Operating result (before financing expenses and taxes)</b>	<b>64.097</b>
Interest and similar income earned	0
Interest and similar expenses incurred	0
<b>Results before taxes</b>	<b>64.097</b>
Income tax for the period	- 11
<b>Net result for the period</b>	<b>64.086</b>

## INDIVIDUAL BALANCE SHEET

(Amount in Euros)

	<b>31st December 2023</b>
<b>Assets</b>	
Tangible Fixed Assets	1.067
Total Non-Current Assets	1.067
State and Other Public Entities	2.156
Deferred Charges	3.916
Cash and Bank Deposits	11.818
Total Current Assets	80.909
	81.976

### Endowment Funds and Liabilities

Funds	0
Carried forward results	0
<b>Net result for the period</b>	<b>64.086</b>
	<hr/>
<b>Total Endowment Funds</b>	<b>64.086</b>
	<hr/>

### Liabilities

Total Non-Current Liabilities	0
	<hr/>
Suppliers	2.156
State and other public entities	3.916
Other current liabilities	11.818
	<hr/>
Total Current Liabilities	17.889
Total Liabilities	17.889
Other current liabilities	81.975

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## INDIVIDUAL CASH FLOW STATEMENT

(Amount in Euros)

### Cash Flows from Operating Activities

Receipts from customers and users	113.400
Payments to suppliers	- 7.323
Payments to personnel	- 15.290
Cash generated from operations	90.787
Payment/receipt of income tax	- 10.850
<b>Cash Flows from Operating Activities (1)</b>	
<b>Payment/receipt of income tax</b>	0

Payments relating to:	
Tangible fixed assets	- 1.129
	- 1.129
<b>Receipts from:</b>	<hr/>
	- 1.129
	<hr/>
<b>Cash Flows from Investing Activities (2)</b>	- 1.129
	<hr/>
<b>Cash Flows from Investing Activities</b>	<hr/>
Receipts from:	<hr/>
	<hr/>
Payments relating to:	0
	<hr/>
	<hr/>
<b>Cash Flows from Financing Activities (3)</b>	0
	<hr/>
<b>Cash and equivalents variation (1+2+3)</b>	78.808
	<hr/>
<b>Effect of exchange rate differences</b>	0
	<hr/>
<b>Cash and equivalents at the beginning of the period</b>	0
	<hr/>
<b>Cash and equivalents at the end of the period</b>	78.808
	<hr/>





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# AUDIT REPORT



**MIRRI** MICROBIAL ERIC  
RESOURCE RESEARCH  
INFRASTRUCTURE  
EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM









G. CASTRO, R. SILVA, A. DIAS & F. AMORIM, SROC, LDA

– comunicamos com os encarregados da governação, entre outros assuntos, o âmbito e o calendário planeado da auditoria, e as conclusões significativas da auditoria incluindo qualquer deficiência significativa de controlo interno identificado durante a auditoria.

## RELATO SOBRE OUTROS REQUISITOS LEGAIS E REGULAMENTARES

### Sobre o relatório de gestão

Dando cumprimento aos requisitos legais aplicáveis, somos de parecer que o relatório de gestão foi preparado de acordo com os requisitos legais e regulamentares aplicáveis em vigor e a informação nele constante é coerente com as demonstrações financeiras auditadas e, tendo em conta o conhecimento e a apreciação sobre a Entidade, não identificamos incorreções materiais.

Braga, 03 de maio de 2024

**G. Castro, R. Silva, A. Dias & F. Amorim, SROC Lda.**  
(SROC 153; CMVM 20161463)  
Representada por

Fátima Amorim (ROC 1279; CMVM 20160890)

# FREE TRANSLATION



G. CASTRO, R. SILVA, A. DIAS & F. AMORIM, SROC, LDA

## STATUTORY AUDITOR'S REPORT

*(Free translation from a report originally issued in Portuguese language. In case of doubt the Portuguese version will always prevail)*

### REPORT ON THE AUDIT OF THE FINANCIAL STATEMENTS

#### Opinion

We have audited the accompanying financial statements of **INFRAESTRUTURA DE INVESTIGAÇÃO DE RECURSOS MICROBIANOS – CONSÓRCIO PARA UMA INFRAESTRUTURA EUROPEIA DE INVESTIGAÇÃO - MIRRI-ERIC** (the Entity), which comprise the balance sheet as at December 31, 2023 (showing a total of 81 976 euros and a total net equity of 64 086 euros, including a net profit of 64 086 euros), the income statement by nature and statement of cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements give a true and fair view, in all material respects, of the financial position of **INFRAESTRUTURA DE INVESTIGAÇÃO DE RECURSOS MICROBIANOS – CONSÓRCIO PARA UMA INFRAESTRUTURA EUROPEIA DE INVESTIGAÇÃO - MIRRI-ERIC** as at December 31, 2023, and of its financial performance and its cash flows for the year then ended in accordance with the Accounting and Financial Reporting Standard for Non-Profit Sector Entities adopted in Portugal through the Accounting Standardization System.

#### Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (ISAs) and further technical and ethical standards and guidelines as issued by Ordem dos Revisores Oficiais de Contas (the Portuguese Institute of Statutory Auditors). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section below. We are independent of the Entity in accordance with the law and we have fulfilled other ethical requirements in accordance with the Ordem dos Revisores Oficiais de Contas code of ethics.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

#### Responsibilities of management and the supervisory body for the financial statements

Management is responsible for:

- the preparation of financial statements that give a true and fair view of the Entity's financial position, financial performance and cash flows in accordance with the Accounting and Financial Reporting Standard for Non-Profit Sector Entities adopted in Portugal through the Accounting Standardization System;

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G. CASTRO, R. SILVA, A. DIAS & F. AMORIM, SROC, LDA

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# FREE TRANSLATION



G. CASTRO, R. SILVA, A. DIAS & F. AMORIM, SROC, LDA

- evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation;
- communicate with those charged with governance, including the supervisory body, regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Our responsibility also includes the verification that the information contained in the management report is consistent with the financial statements.

## REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

### On the management report

In compliance with the applicable legal requirements, it is our opinion that the management report was prepared in accordance with the applicable legal and regulatory requirements and the information contained therein is consistent with the audited financial statements and, having regard to our knowledge and assessment over the Entity, we have not identified any material misstatements.

Braga, May 3, 2024

**G. Castro, R. Silva, A. Dias & F. Amorim, SROC Lda.**  
(SROC 153; CMVM 20161463)  
Represented by

Fátima Amorim (ROC 1279; CMVM 20160890)

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# 12 FINAL REMARKS

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The year of 2023 was full of big challenges for MIRRI-ERIC, which brought it to be registered as a Portuguese legal entity in May. In parallel, in September, a new Director started, facing the urgent need to implement the management procedures to fulfil its obligations. The transition from a ESFRI project to a ESFRI landmark and a legal entity registered in Portugal drove MIRRI-ERIC to face new operational challenges, a new geographic landscape and a new financial situation.

To better address these issues, the activities of MIRRI-ERIC between 2024 and 2028 will focus on the development of four strategic objectives (SOs):

-  SO1: Consolidating and Growing. Consolidate and enlarge MIRRI-ERIC Members, establish a solid and sustainable governance and operations structure and enhance its visibility and recognition as ESFRI Landmark.
-  SO2: Strengthening. Strengthen MIRRI-IS infrastructure, resources and service provision capacity, communicating MIRRI-ERIC as the ESFRI Landmark that nourishes and makes available metadata-enriched microbial resources to academia and industry worldwide.
-  SO3: Empowering. Develop internal capacity in data management and the capacity of users to access and use MIRRI-ERIC's microbial culture collections, state-of-the-art expertise and their metadata.
-  SO4: Leveraging. Engage with other Research Infrastructures and international organisations in Europe and worldwide, and demonstrate MIRRI-ERIC's socioeconomic impact.

These will bring MIRRI-ERIC to a mature level providing microbial and genetic resources to enable the microbial academic and industrial research communities enhancing research and innovation in health and food safety, agrofood security, and environment and energy for public good.

# AUTHORS

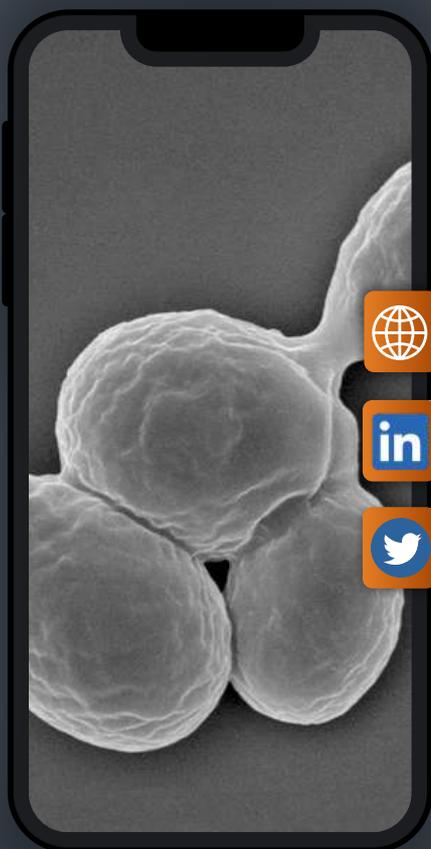
Ana Portugal Melo & Ana João Ferreira

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