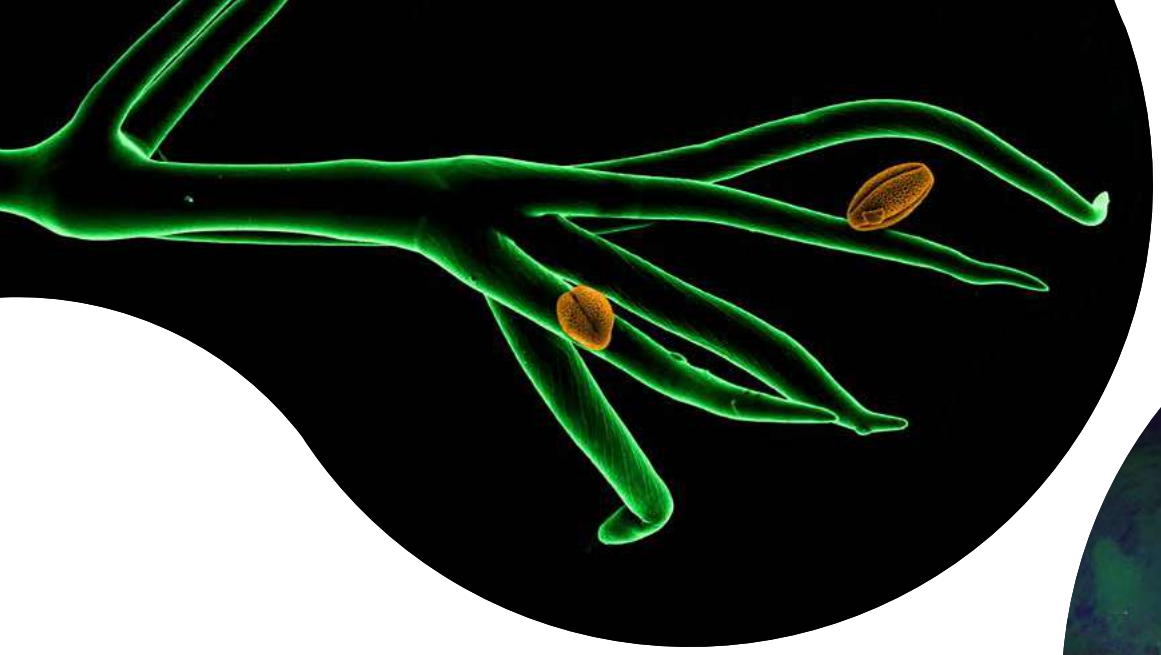
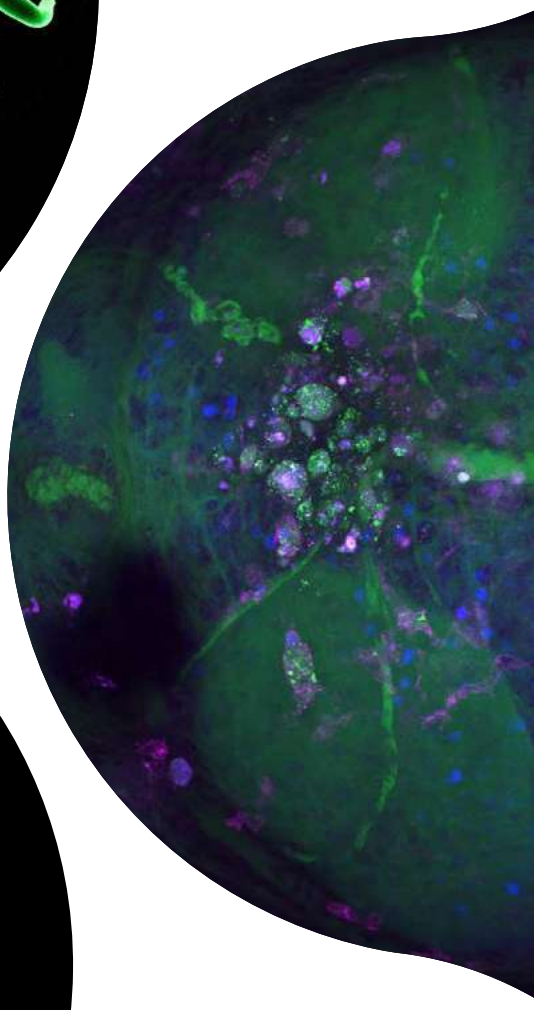
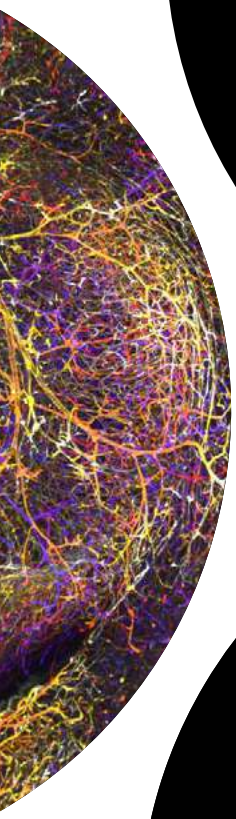




EURO BIOIMAGING

2024

ANNUAL REPORT



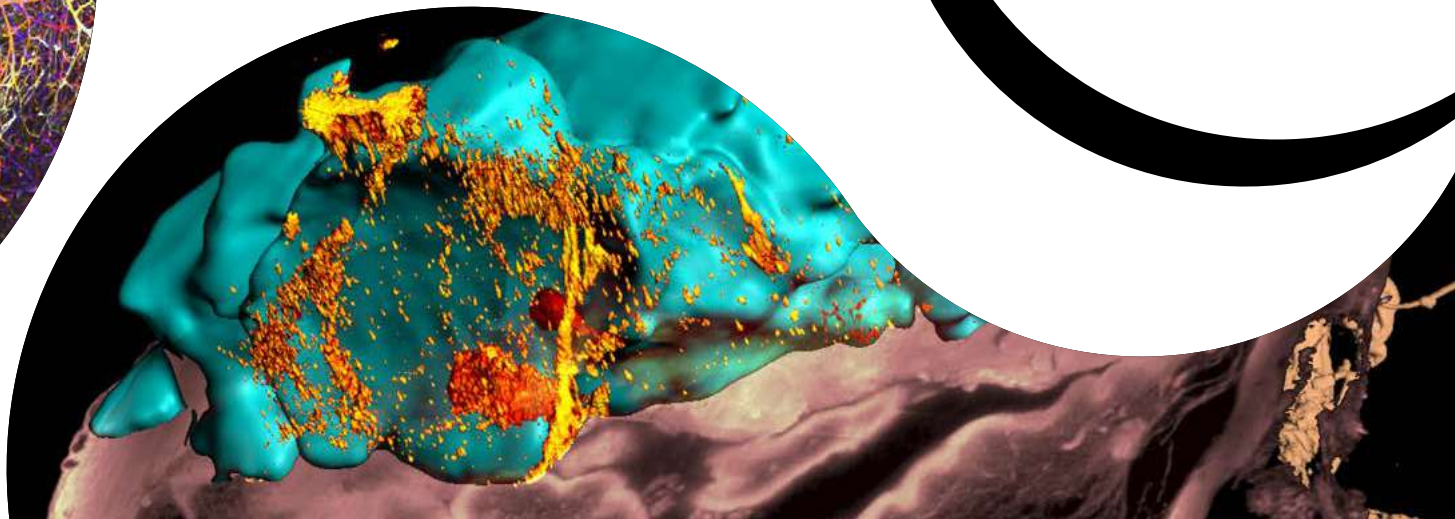


Image *life,*
discover the future

TABLE OF CONTENTS

We are the European landmark Research Infrastructure for biological and biomedical imaging as recognized by the European Strategy Forum on Research Infrastructures (ESFRI). Euro-BioImaging is the gateway to world-class imaging facilities across Europe.

ABOUT US

FOREWORD FROM THE DIRECTORS

John Eriksson
Director General

Antje Keppler
Bio-Hub Section Director

Linda Chaabane
Med-Hub Section Director

European-level research infrastructures such as Euro-BioImaging are an important strategic investment for Member States. Faced with tighter budgets and diverging priorities, governments must mutualise resources and maximise added value deriving from their national investments. Transnational, open access research infrastructures allow governments to do just that. By strategically investing in high-end technologies and human expertise as part of a European science ecosystem, individual countries can foster their local talent and operate competitive core facilities which are assets for both the national as well as the European research communities.

Furthermore, the benefits of shared imaging infrastructure go far beyond direct support for research and innovation. By providing opportunities for collaboration and exchange between national expert communities, Euro-BioImaging contributes to a stronger, more competent European work force of scientists and thus provides opportunities for innovation. For example, the EU-funded project EVOLVE allows us to develop and offer a comprehensive training programme which includes a job shadowing and mentoring programme to benefit staff working at Euro-BioImaging Nodes. Our programmes contribute to skill and capacity building as well as networking of experts who are often working in isolation on a national level.

Euro-BioImaging has made significant strides in its first 5 years, particularly in expanding access to imaging technologies and fostering scientific collaboration. A notable rise in user projects was observed, with more transnational requests, reflecting the growing demand for advanced imaging technologies. The infrastructure has broadened its technology portfolio and enhanced image data services, ensuring researchers have access to cutting-edge tools.

Euro-BioImaging is actively participating in numerous European research initiatives, addressing topics such as AI tools for image analysis, sensitive data management, and technology development. Researchers using Euro-BioImaging facilities have made breakthroughs in areas like understanding infectious diseases, neuroscience, cancer research, cell biology and more, demonstrating the impact of high-quality imaging on life sciences.

The benefits of being part of this international research infrastructure community for the estimated 1000+ staff working for Euro-BioImaging Nodes and thousands of researchers who have conducted research at Node facilities in the past 5 years are enormous. In 2025 we are developing indicators to start assessing Euro-BioImaging's socio-economic impact. Nevertheless, we already observed positive impact such as interdisciplinary partnerships and innovative discoveries. Research conducted through Euro-BioImaging contributes to healthcare innovations, environmental studies, and policy development.

Shared infrastructure and expertise is a key strength and gives Europe a competitive edge on the global stage. Through transnational collaboration, Euro-BioImaging facilitates excellent science, contributing to the international positioning of Europe's research and innovation strength and socio-economic impact. Thanks to our Member States, Euro-BioImaging continues to invest in and provide an increasing offer of open access imaging services, to support Open Science and scientific collaboration across Europe.

INFRASTRUCTURE AT A GLANCE

Euro-BioImaging ERIC is the European Research Infrastructure Consortium for biological and biomedical imaging, awarded the landmark status by ESFRI and thus recognized as the implemented reference infrastructure in the imaging field. Euro-BioImaging was established as an ERIC in the end of 2019.

The distributed Euro-BioImaging infrastructure builds on a set of already existing national and international facilities of excellence in imaging technologies, the Euro-BioImaging Nodes, which provide physical or remote access to imaging technologies and image analysis tools, deliver training, and support the users at all stages of their research projects with their experienced staff.

Every researcher, both from academia and industry, can apply for Euro-BioImaging services whenever they have a project requiring imaging technologies and expertise but do not have the equipment or the skills to perform experiments at their home institute.

The Infrastructure is jointly coordinated by the Euro-BioImaging Hub, which provides general supporting services including the management of user access, policy and lobbying, community and skill building activities, and image data services.

19

MEMBERS (COUNTRIES & EMBL)

As of end 2024

41

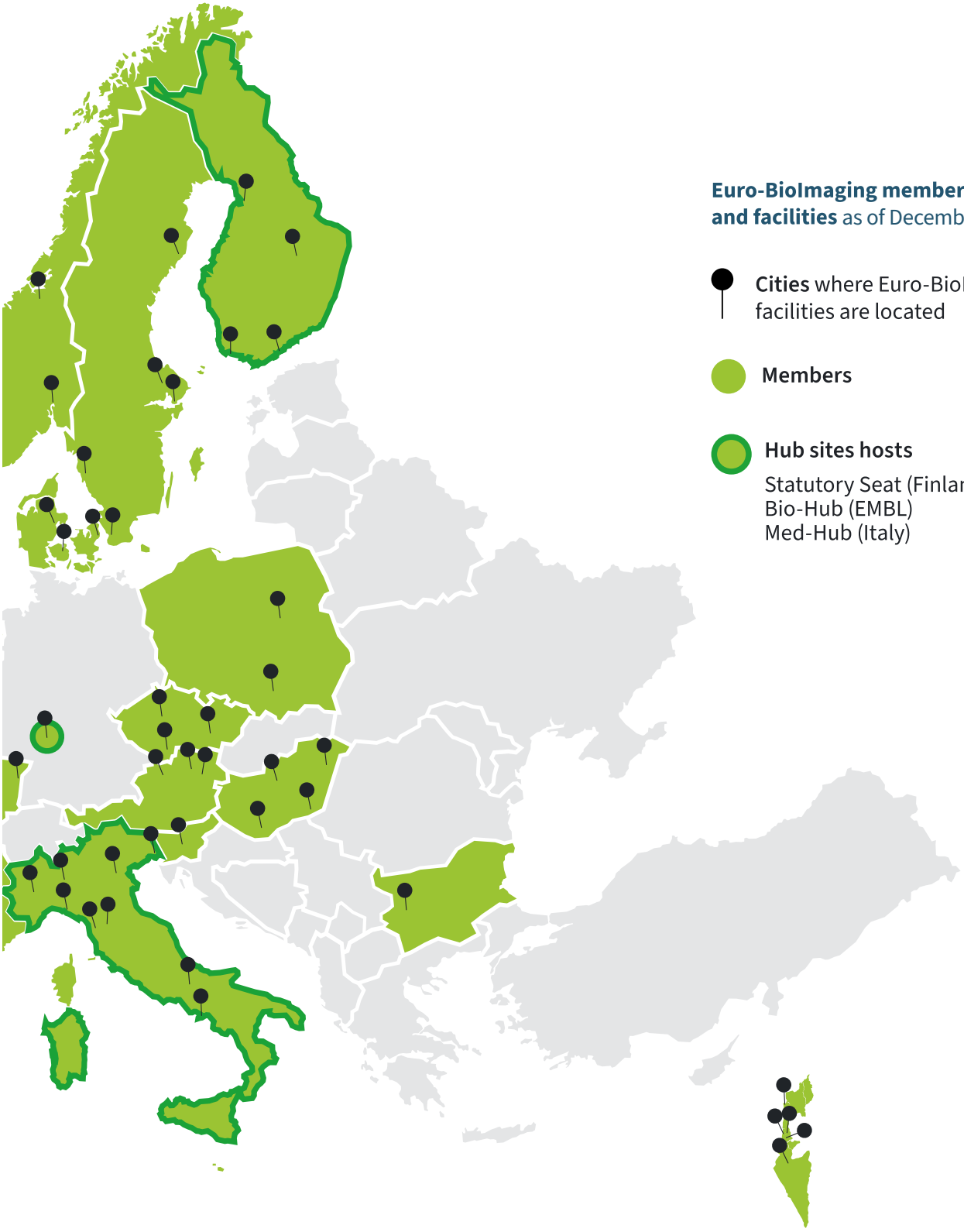
NODES

As of end 2024

237

IMAGING FACILITIES

As of end 2024



Euro-BioImaging members and facilities as of December 2024

Cities where Euro-BioImaging facilities are located

Members

Hub sites hosts

Statutory Seat (Finland)
Bio-Hub (EMBL)
Med-Hub (Italy)

120+

TECHNOLOGIES & IMAGE DATA SERVICES

As of end 2024

862

USER PROJECTS

As of end 2024

15

EU-FUNDED PROJECTS

As of end 2024

HIGHLIGHTS OF 2024

JANUARY

6 new Nodes join Euro-BioImaging ERIC

Panel of Nodes meeting (online)

foundingGIDE

foundingGIDE project kicks off

MARCH

Onboarding 12 scientific ambassadors

EVOLVE

EVOLVE project kicks off

Euro-BioImaging User Forum: Image Data

APRIL

All Hands Nodes meeting in Torino

Unveiling Euro-BioImaging's Strategic Plan

Guide to FAIR BioImage Data event

MAY

10th Euro-BioImaging Board Meeting in Heidelberg

Celebrating 10 years of industry collaboration with EBIB

JUNE

Node upgrades - 20 new facilities join Euro-BioImaging

Euro-BioImaging attends the Conference on European Research Infra-structures

Euro-BioImaging co-organises workshop on "Enhancing SME Access to European RIs" in Brussels

JULY

Participants selected for the 1st EVOLVE Job Shadowing cohort

ESFRI monitoring report - fully satisfactory

AUGUST

DG RTD Director visits Euro-BioImaging headquarters

OCTOBER

Celebrating the achievements of the BY-COVID project

Euro-BioImaging User Forum: Focus on Immunology

ILLUMINATE project kicks off

EBIB Advisory panel & SAB meeting (hybrid)

Evaluation by the Scientific Advisory Board

NOVEMBER

foundingGIDE community event and hackathon

Euro-BioImaging joins the EIC ecosystem partnership programme

Empowering EIC Innovators matchmaking event organised in Leuven

11th Euro-BioImaging Board meeting (online)

Successful conclusion of the eRImote project

DECEMBER

Panel of Nodes meeting (online)

Euro-BioImaging attends ICRI

OUR TEAM

Statutory Seat
Turku, Finland

Bio-Hub
EMBL, Germany

Med-Hub
Torino, Italy

JOHN ERIKSSON
Director General

ANTJE KEPPLER
Section Director
Bio-Hub

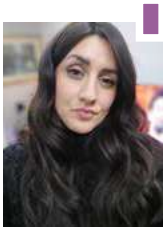
LINDA CHAABANE
Section Director
Med-Hub

VICTORIA LUCIA ALONSO
Scientific Project Manager

AMARANTA AMADOR
Head of Legal Services and International Relations

DANIELA AVILES HUERTA
Scientific Project Manager

JOHANNA BISCHOF
Head of Bio-Hub Operations



ANNA ELENA BITETTI
Image Data Scientist

ERIKA CERUTTI
Scientific Project Manager

MARIANNA CHILDRESS POLI
Senior Communication Officer

GIUSEPPE DIGILIO
Operations Advisor

DOROTHEA DÖRR
Scientific Project Manager

AYOUB EL GHADRAOUI
EU Project Manager

SOLVEIG ERIKSSON
Multimedia Producer

JIRI FUNDA
Project Manager

CAMILO GUZMÁN
Scientific Officer Quality Manager of Biological Imaging

DALE LAWSON
Senior Scientific Project Manager

ANTING LI
Personal Assistant to the Management

DARIO LONGO
Senior Scientist

RAKESH MAHATO
Software Developer

AASTHA MATHUR
Head of Image Data Services

MARIA MIRZA
Scientific Project Manager

SUSAN MUCHAI
Euro-BioImaging Bio-Hub Administrator

FERIEL RAMDHANE
Image Data Scientist

ZORICA RUOHONEN
Finance and Administration Manager

ARINA RYBINA
Scientific Project Manager

JAANUS SAARNAK
Software Developer

BEATRIZ SERRANO-SOLANO
Scientific Project Manager

SUDEEP DAS
AI and Biomedical Data Strategy Officer

RAFAEL DIAZ
Junior Scientific Officer

ANNE-CHARLOTTE JOUBERT
Senior Officer for European Affairs and Stakeholder Engagement

PASI KANKAANPÄÄ
Senior Scientific Manager

ISABEL KEMMER
FAIR Image Data Steward

BUĞRA ÖZDEMIR
Image Data Specialist

CLAUDIA PFANDER
Strategic Business Developer & Industry Board Coordinator

ILARI PULLI
Head of Operations

SUSANNE VAINIO
Scientific Officer Quality Manager of Medical Imaging

ALESSANDRA VIALE
Head of Med-Hub Operations

AMAN YADAV
Software Developer

MANY THANKS!

Two of our team members moved on to new horizons. **LAURENT CHMIEL**, Communications Officer, and **MARCELA RIVERA**, Junior Scientific Officer, have both moved to new positions. We want to thank them for their contributions and wish them much success in their new professional endeavors!

OUR MISSION

We empower researchers with open access to innovative biological and biomedical imaging technologies, expertise, data services, and training.

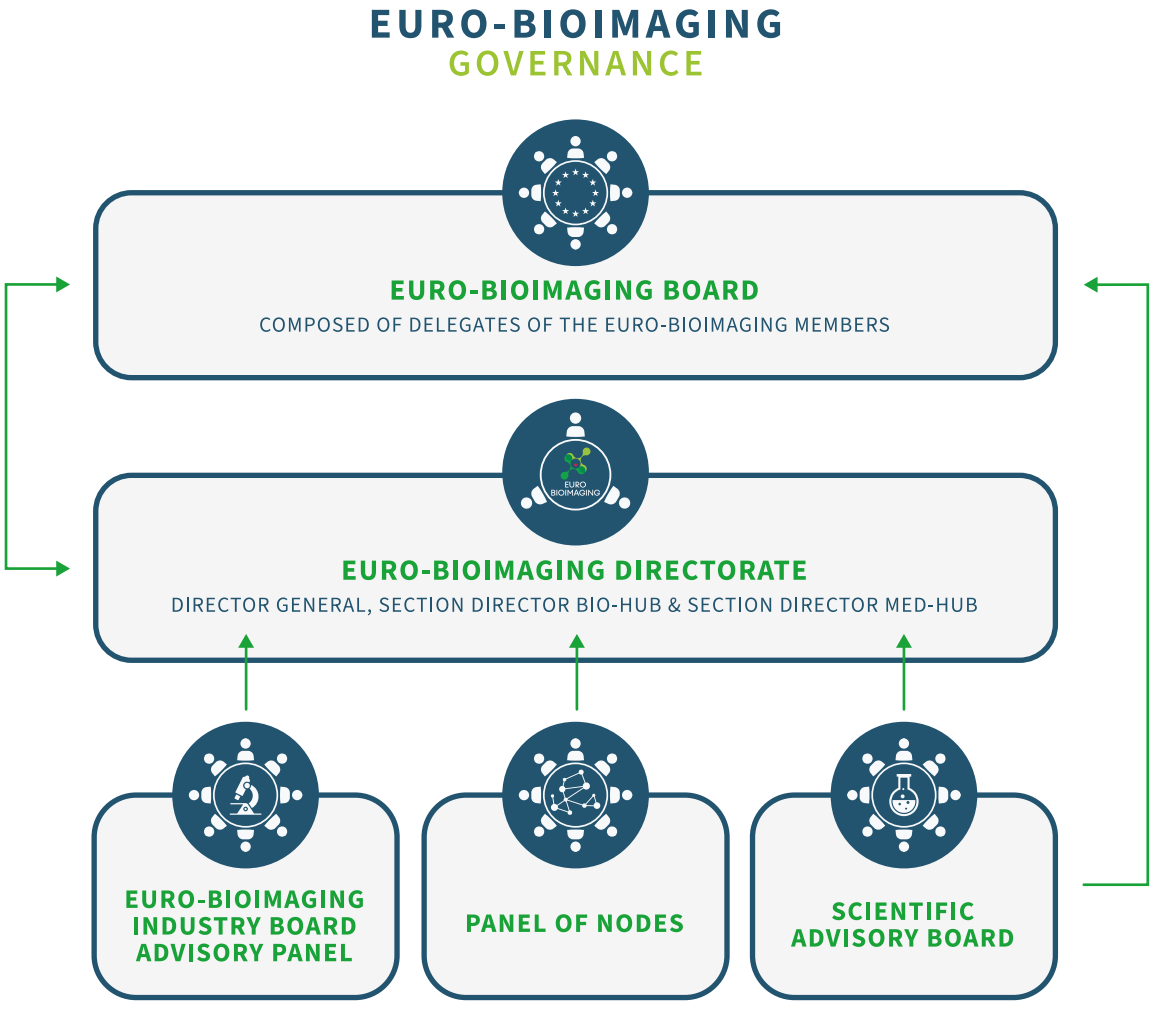
We enable cutting-edge research and contribute to addressing pressing societal challenges. As an ERIC and an ESFRI Landmark Research Infrastructure, Euro-BioImaging contributes to the overall competitiveness of the European Research Area and participates in global imaging initiatives.

GOVERNANCE

Euro-BioImaging is managed by its Hub and governed by the Euro-BioImaging Board. Our governance also includes the Scientific Advisory Board (SAB), to oversee the scientific, ethical, technical and quality management aspects of the Euro-BioImaging ERIC activities. The Panel of Nodes, representing the individual Nodes, advises the Euro-BioImaging Directorate on operational matters concerning the Nodes and service provision. In addition, the Industry Board Advisory Panel provides input for the Directorate on industry-relevant aspects. The governing bodies meet regularly and actively contribute to the operations and development of our infrastructure.

In 2024, we had many opportunities to meet with our governance bodies and Node representatives. In January, the Panel of Nodes met online to prepare for the annual All Hands Nodes Meeting. In April, Panel of Nodes members and other Node representatives, Hub team members and industry partners travelled to Torino for the All Hands Nodes meeting hosted by the Euro-BioImaging Med-Hub. In May, we hosted the 10th Euro-BioImaging Board meeting at EMBL Heidelberg to make strategic decisions for the future of our infrastructure. In October, we met with our Scientific Advisory Board (SAB) members in person as part of the Euro-BioImaging ERIC evaluation process (see Achievements section, p. 17). This meeting also presented an opportunity for a joint meeting between the SAB and the Industry Board Advisory Panel. In November, we held an online meeting with the Euro-BioImaging Board and in December, we met online with the Panel of Nodes.

In addition, the Euro-BioImaging Industry Board celebrated its 10 year anniversary in 2024, an important achievement and the perfect occasion to reflect on how to build successful academia-industry collaborations (see Achievements section, p. 20).



10th Euro-BioImaging Board Meeting, EMBL, Heidelberg

On May 21-22, 2024, the Euro-BioImaging Hub team had the pleasure of hosting the 10th Euro-BioImaging Board Meeting at EMBL Heidelberg. Under the excellent chairing of Professor Maddy Parsons, the Board made a number of decisions and discussed important topics for the future of the Euro-BioImaging infrastructure.

All Hands Nodes Meeting 2024, Torino, Italy

From April 17-19, nearly 100 representatives of Euro-BioImaging Nodes, Hub team, and industry partners attended the All Hands Nodes meeting at the lovely “Palazzo Ceriana Mayneri” in downtown Torino. The event started with a satellite event in collaboration with the EUCAIM project, followed by a joint Euro-BioImaging Industry Board & Nodes Workshop. Sessions covered topics like Imaging across scales and modalities, Screening and working with disease models, Updates from the Nodes, and Updates on Euro-BioImaging operations. One highlight was the celebration of the 10 year anniversary of the Euro-BioImaging Industry Board.

ACHIEVEMENTS

OVERVIEW

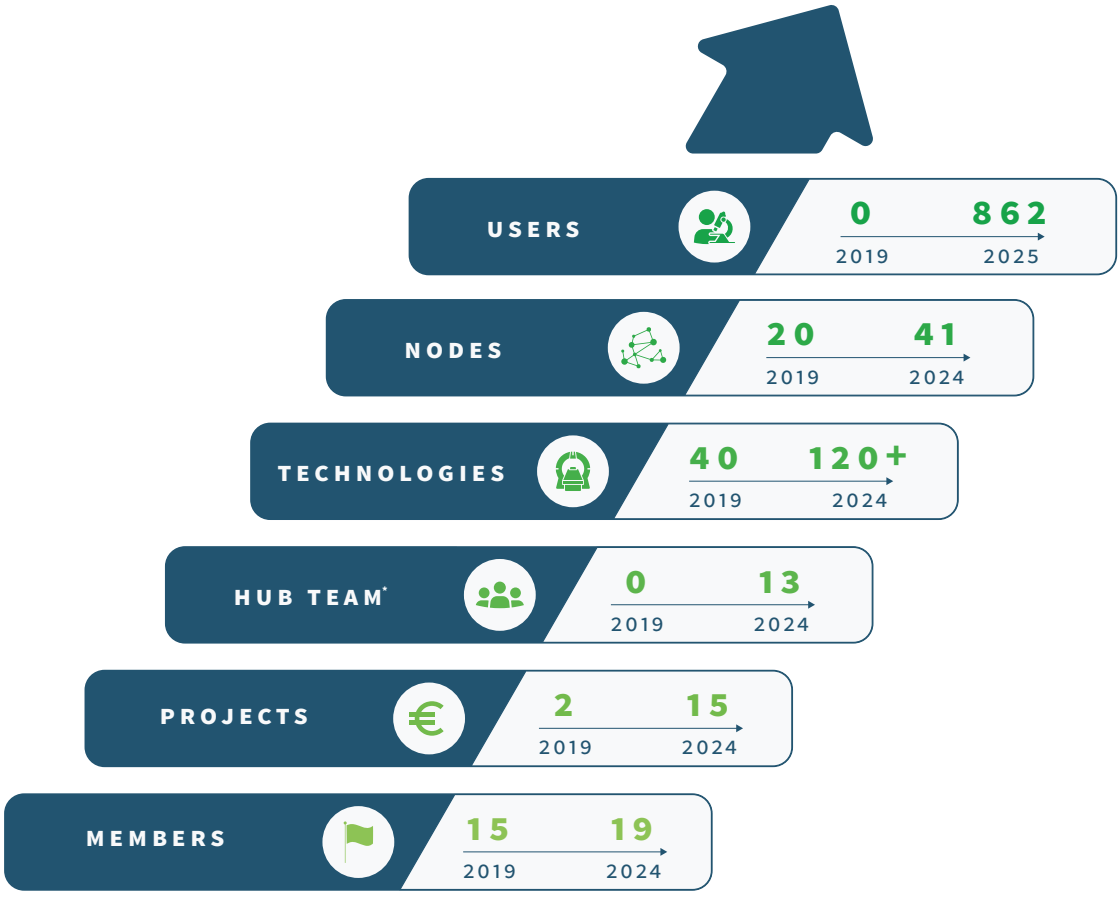
The year 2024 at Euro-BioImaging was marked by a number of noteworthy achievements, from expansion to evaluation. In 2024 our Node community grew significantly. Spain and Belgium joined Euro-BioImaging as new Member States in late 2023, and in early 2024, we oversaw the addition of six new Nodes from these countries to our Node family. An additional 20 new facilities became part of the Euro-BioImaging infrastructure in France, Sweden, and the Czech Republic through the Node upgrade process in May 2024.

This remarkable expansion was coupled with the start of several extremely impactful EU-funded projects, which will contribute to the development of our infrastructure. Of these, the most important is the EVOLVE project, which supports Euro-BioImaging development on many fronts. EVOLVE aims to strengthen Euro-BioImaging's operability, capacity, and impact. The actions and outcomes of the EVOLVE project are designed to benefit the entire Euro-BioImaging community, for example by providing training and other opportunities for Node staff (see p. 71). In addition, Euro-BioImaging was awarded the foundingGIDE project, coordinating a global consortium to develop international image data sharing standards. We are also deeply involved in the IHI-funded ILLUMINATE project, along with three Euro-BioImaging Nodes, for the development of new theranostics with high-field MRI. These projects also help our infrastructure to expand by bringing onboard new Hub team members to contribute to these aspects of our development.

We also celebrated the 10th anniversary of the Euro-BioImaging Industry Board and the outcomes of a decade of close collaboration with industry (see p. 20–21). In parallel, we focussed on strengthening our visibility with commercial users through a range of new initiatives and policy efforts (see p. 38–39).

All these exciting new possibilities and achievements were framed by two major evaluation and review exercises that Euro-BioImaging underwent in 2024 - the ESFRI monitoring and the evaluation of the entire Infrastructure by the Euro-BioImaging Scientific Advisory Board (SAB).

GROWTH TO EUROPEAN-WIDE PRESENCE - IMPLEMENTING THE PREVIOUS STRATEGY



*FTE fully funded by Euro-BioImaging member contributions

REVIEW AND EVALUATION

Evaluation is an important point in the life cycle of any organisation. In 2024, Euro-BioImaging embarked on two separate, independent evaluations - the ESFRI monitoring and the Euro-BioImaging SAB review. These evaluations gave us the opportunity to highlight our current status and achievements to different experts and to receive their insights and recommendations as we implement our Strategic Plan 2024-2028.

ESFRI MONITORING

ESFRI, the European Strategy Forum on Research Infrastructures, is a strategic instrument to develop the scientific integration of Europe and to strengthen its international outreach. The mission of ESFRI is to support a coherent and strategy-led approach to policy-making on research infrastructures in Europe.

As part of its mission, ESFRI carries out regular reviews of its individual Landmark infrastructures with the objective to facilitate regular communication between ESFRI and Landmarks regarding their long-term development, to assess the quality of individual Landmarks, identify potential issues and support appropriate actions, and gather information on their performance, outputs, and impacts, while also providing insights into the broader European RI ecosystem.

A harmonised monitoring process

The monitoring process, conducted every five years and harmonized across Landmark infrastructures from all scientific domains, involves a questionnaire, KPIs, hearings, and optional site visits, and is carried out by dedicated Monitoring Panels coordinated by the ESFRI Monitoring Committee.

Euro-BioImaging is a Landmark infrastructure on the ESFRI roadmap and therefore participates in the ESFRI monitoring.

Fully satisfactory performance

The ESFRI Monitoring report for Euro-BioImaging, issued in July 2024, found the performance of Euro-BioImaging to be fully satisfactory, which is the highest rating an infrastructure can be given.

Regarding its pan-European relevance, Euro-BioImaging was seen in a unique position to promote a strong, interdisciplinary collaborative environment that strives towards Open Science. In particular, the involvement in several collaborative projects and initiatives such as the European Cancer Mission and INFRA-TECH projects was highlighted and commended.

EURO-BIOIMAGING SAB EVALUATION

The Strategic Advisory Board (SAB) of Euro-BioImaging oversees the scientific, ethical, technical, and management quality of Euro-BioImaging ERIC activities and provides strategic advice to the Euro-BioImaging Board and Directorate. According to Art. 7 of the Euro-BioImaging Statutes, it is tasked with regular reviews of Euro-BioImaging's activities and its components, including the Hub and Nodes.

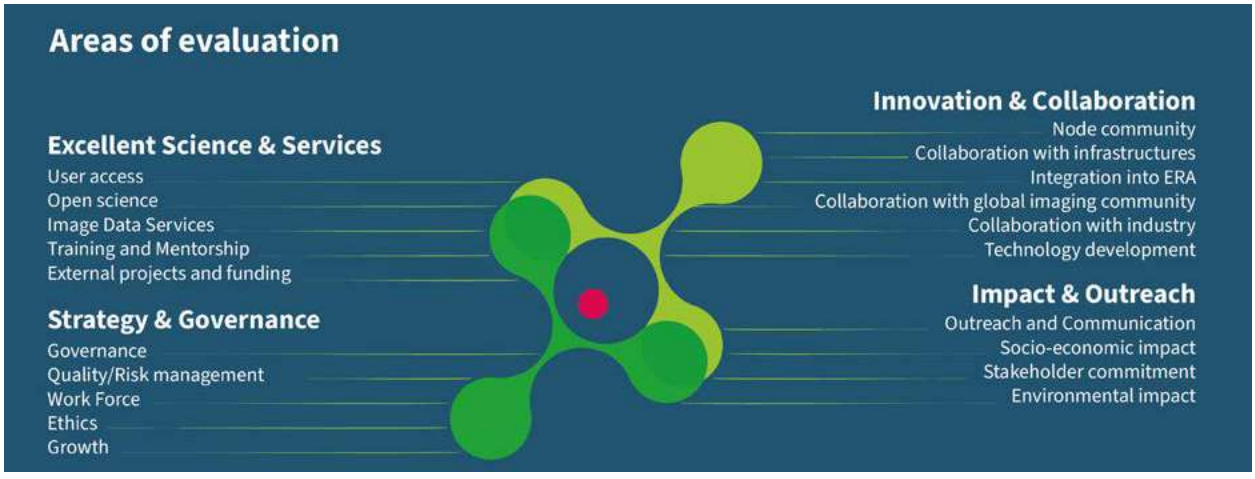
In 2024, the SAB undertook a detailed and comprehensive evaluation of activities, impact, and organisation of the Euro-BioImaging Hub. Based on comprehensive documentation, reports, presentations and discussions with the Euro-BioImaging Directorate, the SAB prepared its report, which was presented to the Euro-BioImaging Board in November 2024.

Euro-BioImaging Scientific Advisory Board members and Euro-BioImaging Directorate at EMBL Heidelberg in October 2024. SAB members pictured here came from Australia, Japan, Europe, Canada and the United States, other members joined online.

The SAB evaluation included all aspects of Euro-BioImaging operations and activities. The SAB report on the evaluation was very positive across all areas. Euro-BioImaging is very grateful to its Scientific Advisory Board for their commitment, support, and the endorsement and thoughtful recommendations for future developments provided in the report. We also thank the entire Euro-BioImaging community for contributing to the data collection underlying the evaluation process.

Euro-BioImaging Section Directors Antje Keppler and Linda Chaabane (from left to right respectively) with Anne-Charlotte Joubert.

> *The SAB has been consistently impressed by the strategic growth of Euro-BioImaging, and the Directorate and team are to be commended on not only the growth of the community, that is way ahead of the KPI's and expectations, but also the truly collaborative culture that has been embedded across the network.*
>
> Excerpt from the SAB Report, Euro-BioImaging Evaluation 2025



EXCERPTS FROM THE SAB REPORT

We are delighted to share some excerpts from the Euro-BioImaging SAB report to indicate the state-of-play of key themes and interest areas for our Infrastructure.

Significant Growth and Impact

Euro-BioImaging ERIC has become a major player in the European Research Infrastructure landscape, supporting life science researchers with state-of-the-art imaging capabilities and demonstrating a strong collaborative culture.

There has been a notable increase in user access, publications, and grants resulting from Euro-BioImaging services.

The adoption of Image Data Services is a highly positive development.

Collaborative Initiatives

Euro-BioImaging exhibits successful integration with other European Research Infrastructures (ERICs) and participation in many EU-funded projects.

It shows active engagement beyond life sciences, including with environmental and material sciences, showcasing cross-disciplinary innovation.

Leadership and Training

Euro-BioImaging plays a leadership role in the European RI landscape and the global imaging community, contributing to initiatives like ERIC Forum and Global BioImaging.

It has a strong focus on training through individual, national, and EU-funded programs, enhancing skills in new technologies and facility management.

Working with Industry

Many diverse activities are facilitated between the Euro-BioImaging industry Board (EBIB) and the Node community with positive impact for both sides.

Commercial user access to Euro-BioImaging services is increasing thanks to a range of dedicated initiatives and support from Euro-BioImaging.

Outreach and Communication

This is an area of particular strength of Euro-BioImaging, considering both the extent of individual outreach and support for individual Nodes or facilities, and the highly successful larger outreach initiatives.

Node community and engagement

The Node community has seen significant growth and is way ahead of KPIs and expectations, particularly in terms of the maturity of the community.

There is increasing national coordination and collaboration across institutions to form coordinated Nodes with complementary capabilities and a collaborative culture. with positive impact for both sides.

Enabling access to open and excellent science through imaging has always been the raison d'etre of Euro-BioImaging since its inception in the early 2010s. It is not only satisfying but impressive to witness its rapid progress toward this singularly ambitious goal. The SAB agrees that the organization has achieved what it has set out to accomplish. Euro-BioImaging is the epitome of how a federated research infrastructure network should operate, and will continue to serve as the role model for other regions of the world.

Excerpt from the SAB Report, Euro-BioImaging Evaluation 2025

10 YEARS INDUSTRY COLLABORATION

The EBIB celebrated its 10-year anniversary in 2024, marking a decade of fostering collaboration between the imaging industry and the broader European community of imaging service providers and users. To commemorate this anniversary, the EBIB organised a special celebration during the Euro-BioImaging Annual All-Hands Meeting, looking back on the long-standing, trustful collaboration between the research infrastructure and its corporate partners.

As part of the anniversary celebrations, five insightful interviews were conducted with key stakeholders in Euro-BioImaging, starting with the first EBIB Chair Christoph Thumser and early coordinator Jan Ellenberg. These interviews highlighted personal experiences and perspectives on the impact of the EBIB over the past decade and can be found on the Euro-BioImaging website.

Euro-BioImaging Industry Board Chair Herbert Schaden (left) with EBIB Coordinator Claudia Pfander (centre) and EBIB Vice-Chair, Martin Tewinkel (right) at the 10 year anniversary celebration that took place during the All Hands Nodes Meeting in Torino, Italy.

Check out
the interviews!

INDUSTRY COLLABORATION MILESTONES

May 2014 Industry Board founded with seven members, first EBIB chairs elected.

November 2014 Industry Board Coordinator position created.

June 2016 First meeting of EBIB with Euro-BioImaging Node candidates.

November 2018 First joint workshop on Image Data kicks off eye-level exchange between facilities and industry on technical topics.

April 2020 Setup of the EBIB Advisory Panel, an important part of Euro-BioImaging ERIC's governance.

March 2021 Tech Exchange webinar is launched.

May 2022 Pilot on industry internships with the Master's Programme in Biomedical Imaging starts.

October 2022 "Smart Microscopy" Workshop and launch of working group.

January 2024 EBIB has grown to 17 members.

March 2024 4 joint grant applications for R&D projects submitted with Nodes and EBIB members.

April 2024 Advanced training workshop series with EBIB partners in the eRImote project.

Celebrating 10 years of successful collaboration between Euro-BioImaging & its Industry Board

Annesha Fariha (centre) was one of the first students to participate in the pilot industry internship programme. Here she is pictured with colleagues at TissueGnostics, where she did her internship.

EBIB meeting in Spring 2018 during the ELMI Conference.

EXCELLENT SCIENCE

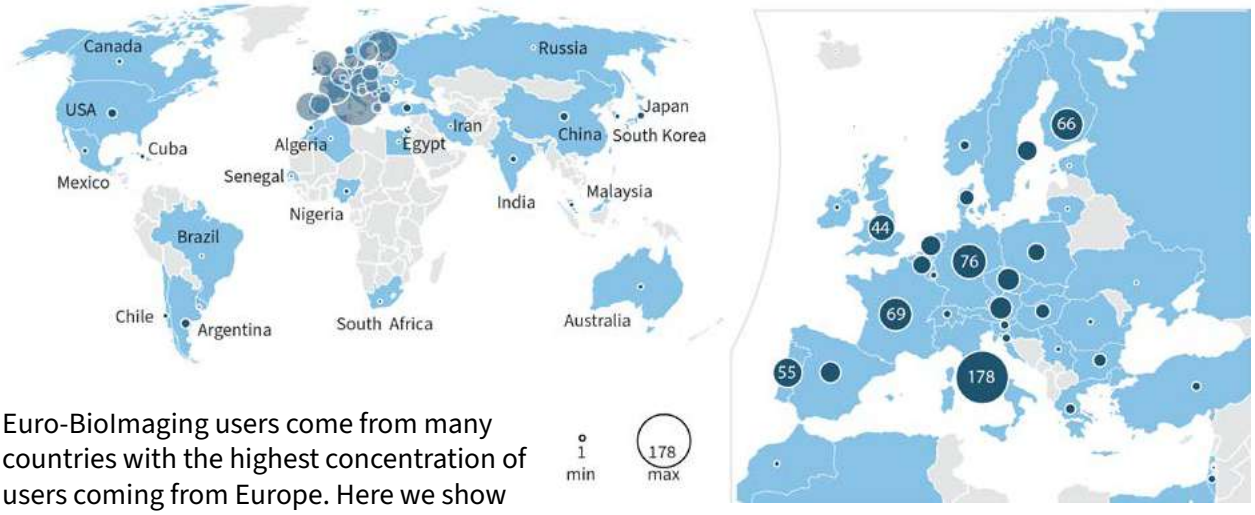
USER ACCESS

Euro-BioImaging is open to researchers from all backgrounds and career stages, and any country in the world. The diversity of Euro-BioImaging's growing user base is highlighted here, with data collected in the Euro-BioImaging Web Portal (EWP) over the period 2020-2024.

This Key Performance Indicator quantifies the total number of applications for Euro-BioImaging services that have been received in our web access portal during the given period of time. In 2021, the Pilot User Access Fund led to an increase in the number of submitted applications. We also measure the number of applications received each year from industry users. Industry users self-identify as such during the application process and include both users from SMEs as well as large companies. It is our goal to see this type of application increase further in the coming years.

User country of origin

Total amount of users per country



Euro-BioImaging users come from many countries with the highest concentration of users coming from Europe. Here we show the location of affiliation of all researchers who applied for Euro-BioImaging services between 2020-2024.

USER STORIES

Through the excellent technologies and expertise provided by our Nodes, Euro-BioImaging users are able to delve deep into their research topics - including the secrets of infections, human brain function, parasitic life cycles, cells and tissues, and beyond. Below we share some user stories, giving compelling examples of the research and skill-building that is facilitated by Euro-BioImaging.

Cancer

> *The best things that happened to me career-wise in the past five years have been getting the ERC grant and collaborating with the CAPI Node of Euro-BioImaging.*
>
> Mohamed Elgendy, Group leader at University Hospital Dresden

Cancer metabolism studies

Cancer cells differ from normal ones in their higher energy and biomass demands due to their faster growth rate. Dr. Mohamed Elgendy's research is precisely aimed at understanding how the growth of tumor cells can be stopped by altering their metabolism using drugs and/or specific dietary restrictions. To explore tumor metabolism questions, Mohamed needed orthotopic models and in vivo imaging. Together with the staff at the Euro-BioImaging **Centre for Advanced Preclinical Imaging (CAPI) Node** in Prague, he was able to culture tumor cells, prepare animal models and monitor the tumor growth by in vivo optical imaging, then run FDG-PET imaging to measure glucose uptake and metabolism in both untreated and treated mice. He hopes to develop a new therapeutic strategy to tackle chemo-resistance.

The CAPI Node has state-of-the-art facilities and vast expertise to create animal models for research projects such as Dr. Elgendy's. Here, a CAPI team member prepares for in vivo optical imaging.

Colorectal cancer

Rabe'ah Almahassneh is a PhD student from the University of Valencia who is investigating mutations in the APC protein (Adenomatous Polyposis Coli), found in 85% of colorectal cancer cases. Her research aims to understand how these mutations impact cell adhesion and migration, potentially driving cancer in young patients. To explore this, Rabe'ah engineered APC mutations and tested them in 2D and 3D spheroid models of colorectal cancer cells. Using these models and live-cell confocal imaging, her team found altered focal adhesions in mutant cells, a clue to colorectal cancer progression. To deepen her study, Rabe'ah turned to the IGBMC photonic microscopy platform in Strasbourg, part of **France-BioImaging's Alsace Node**, to employ total internal reflection microscopy (TIRF), a powerful technique enabling non-invasive, high-resolution imaging of live cells. Rabe'ah's work here exemplifies how access to such technologies can push the boundaries of understanding, offering hope for tackling colorectal cancer more effectively.

> *I was fortunate to gain an access grant to the France-BioImaging platform at the Alsace node (IGBMC, Strasbourg) to do experiments using Total Internal Reflection Fluorescence (TIRF). Throughout my time at the facility, I received exceptional support from the team. Their expertise and assistance greatly enhanced the efficiency and productivity of my experience. The IGBMC imaging platform offered an excellent environment, equipped with all the necessary reagents and materials for my experiments.*
>
> *I acquired skills in TIRF, super-resolution microscopy, and Imaris software, which played a crucial role in the successful completion of my project. This experience yielded promising results that would not have been achievable without the team's support and the outstanding infrastructure provided by France-BioImaging.*
>
> *I sincerely appreciate this opportunity and would strongly recommend the platform to fellow researchers seeking high-quality imaging resources and expert assistance.*
>
> Rabe'ah Almahassneh, PhD student,
> University of Valencia

Rabe'ah in the sample preparation room at IGBMC.

Rabe'ah at the TIRF microscope.

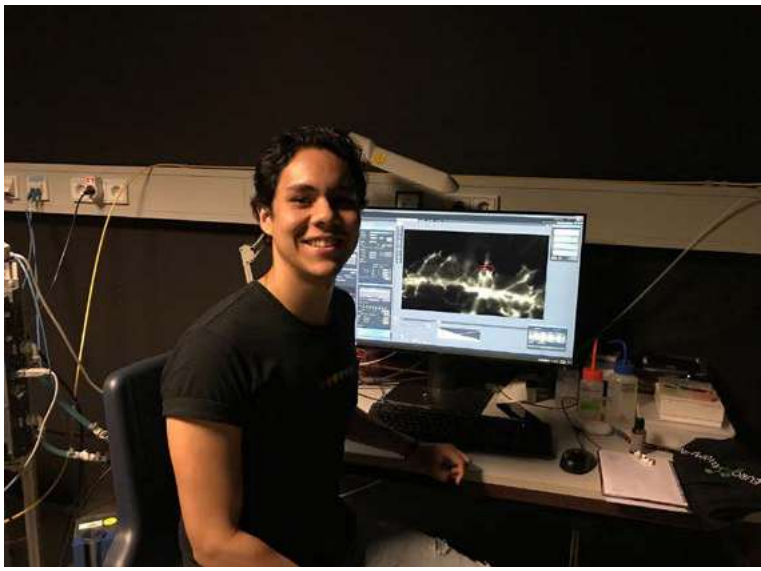
USER STORIES

Cell biology

Tissue development

Associate Investigator Daniel Ríos Barrera and his PhD student, Luis Eduardo Sánchez Cisneros, are developmental biologists at the Instituto de Investigaciones Biomédicas (IIBO) of the Universidad Nacional Autónoma de México (UNAM). Daniel and his team study how tubular systems are formed, focusing on the development of the respiratory system in fly embryos as a model for more complex organisms. Their quest to understand these developing organs brought them to EMBL's Advanced Light Microscopy Facility, part of Euro-BioImaging's **EMBL Node**, to use laser microdissection and 2-photon microscopy to observe the recoil of the developing tissues. Their pre-print, "Adhesion to a common ECM mediates interdependence in tissue morphogenesis in Drosophila" points to a novel mechanism used for tissue coordination during development.

Pre-print: https://doi.org/10.1101/2025.03.15.643376



PhD student Luis Eduardo Sánchez Cisneros at the 2-photon microscope.

Neuroscience

Gut brain axis

Marta Lapo Pais is a PhD student in her last year at the University of Coimbra, Faculty of Science & Technology. Her PhD project aims to understand the relationship between the central dopamine receptors in the brain and the success of bariatric surgery. In collaboration with the **Portuguese Brain Imaging Network Node**, Marta and the Node's staff recruited a cohort of 48 female participants who all underwent clinical, anthropometrics and behavioural assessment, as well as PET and MRI scans to understand the gut brain axis. For that purpose, the central dopamine receptors were mapped through PET, and responses to food cues were analyzed by functional MRI. Marta found that there was a correlation between obesity and altered higher availability of central dopamine receptors in comparison with the control group. Even more interestingly, Marta found that bariatric surgery seems to restore the availability of these receptors.

Marta Lapo Pais,
PhD student at the University of Coimbra

Infectious disease

Leishmania

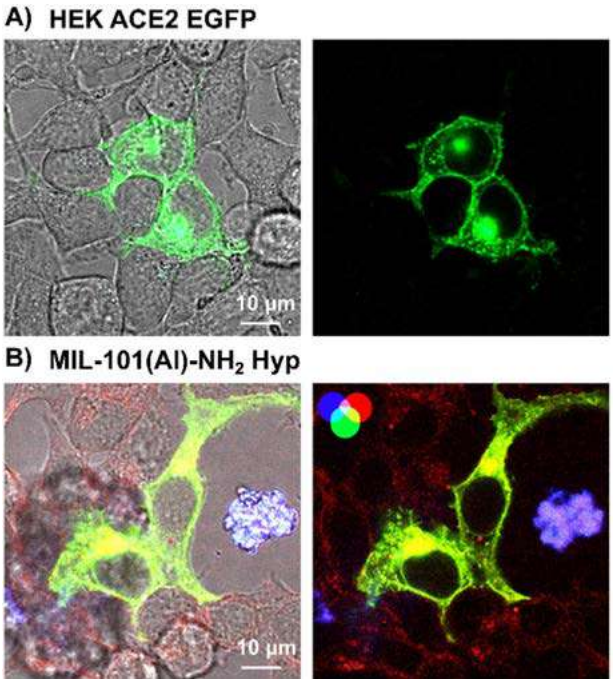
Estefanía Calvo Alvarez is a researcher at the Department of Pharmacological and Biomolecular Sciences, University of Milan in Italy. Her project, supported by **ISIDORe** funding, uses multimodal imaging services from Euro-BioImaging's **Finnish Biomedical Imaging (FiBI) Node** to analyse, for the first time, *Leishmania tarentolae* (Ltar) parasites' homing, tissue tropism, and innate inflammatory responses in both immunocompetent and immunosuppressed mice. Her ultimate goal is to test the hypothesis that, under immunosuppressed conditions, Ltar might exhibit its full pathogenic potential, an insight with potential implications for public health. As Estefanía was not able to travel, the imaging work was carried out remotely by Marja Lohela, an intravital imaging specialist working at the Biomedicum Imaging Unit in Helsinki, part of the FiBI Node.

Estefanía Calvo Alvarez in her lab at the University of Milan.

SARS-CoV-2

With ISIDORe funding Dr. Veronika Huntosova and her team at the Center for Interdisciplinary Biosciences, Technology and Innovation Park, Pavol Jozef Šafárik University in Košice, Slovakia, are pioneering a novel approach to combat SARS-CoV-2 by developing metal-organic framework (MOF) nanoparticles for targeted drug delivery. These nanoparticles are designed to deliver therapeutics into cells expressing ACE2 receptors, which are key entry points for the virus. To better understand this process, they turned to Euro-BioImaging's **Cellular Imaging Hungary Node**, to use Fluorescence lifetime imaging (FLIM). Their collaboration resulted in a publication, "The potential of metal–organic framework MIL-101(Al)–NH2 in the forefront of antiviral protection of cells via interaction with SARS-CoV-2 spike RBD protein and their antibacterial action mediated with hypericin and photodynamic treatment."

https://doi.org/10.1016/j.jcis.2025.137454



Overlapping brightfield and fluorescence images of (A) HEK ACE2 EGFP cells in the absence and (B) in the presence of 0.2 mg/mL MIL-101(Al)–NH2 Hyp. Used under a CC-BY-NC 4.0 license.

Drug development

The Brain Imaging Network (BIN) Node in Portugal is very active in Phase III clinical trials, for the evaluation of new therapeutic treatments. They contribute to multicenter clinical trials to evaluate the efficacy and safety of treatments of Alzheimer's and Parkinson's diseases and different types of tumors, commissioned by, among others, companies such as Biogen, GemVax & Kael, Bial, Gilead, Olema Pharmaceuticals, GlaxoSmithKline, Bayer or Merck Sharp & Dohme Lda. These companies chose the BIN Node as it is fully equipped with relevant PET and MRI instrumentation, and its staff is very experienced both in the imaging part and in the related issues such as subjects recruitment, ethics and legal management, image data processing and analysis.

> *Taking part in clinical trials requires an ability to coordinate across sites respecting the deadlines. At the Portuguese BIN Node we prioritise this type of collaboration and ensure the confidentiality of our user projects. If you are working on neuroscience, cardiology or oncology applications, we welcome you to get in touch.*
>
> Prof. Miguel Castelo Branco, Head of the BIN Node

INDUSTRY AS A USER OF RESEARCH INFRASTRUCTURE SERVICES

Euro-BioImaging Nodes are "open for business" when it comes to working with companies in Health, Life Science and Biotech. We offer many relevant services from ultrastructural characterization in Electron Microscopy, to in vitro screening with latest disease models, to monitoring drug targeting in animals and patients. Imaging definitely plays an important role at different points in the life cycle of the development of new therapeutics, bio products and research tools, independent of research area.

Companies have different priorities, objectives and expectations - compared to academic RI users - and they might be looking for additional value beyond access to high-end instrumentation and technical expertise, such as:

- Working in a quality-managed environment fully compliant with regulatory requirements
- Independently validating new technologies across multiple sites and in real-life environments
- Minimizing disruption risk through backup facilities with common standards and identical workflow protocols
- Accessing a larger network of key opinion leaders and experts to identify new application use cases for their products
- Gaining visibility and the chance to acquire diverse user data and customer feedback on new technologies pre- and post market-entry

PUBLICATIONS

Access to imaging services through Euro-BioImaging enables our users to collect high-quality data, contributing to scientific publications. Imaging core facilities, such as those that make up the Euro-BioImaging Nodes, rely on researchers acknowledging the vital contributions of the expert imaging core facility staff in their publications. Here we highlight some publications from users that were released in 2024.

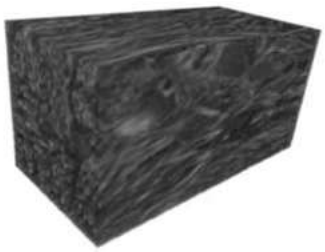
2,200+

publications with support from Euro-BioImaging core facility staff members were reported in 2024

Dental peri-Implant Connective Tissue Performance measured by PCI

In his research, Dr. Michele Furlani, from University of Chieti-Pescara (Italy), studies the wound healing process at the interface between connective tissue and dental implant abutment. Using Phase Contrast Imaging (PCI) at the **PCI Flagship Node in Trieste** (Italy), he analyzed the microarchitecture of the peri-implant soft tissue surrounding a conometric prosthetic connection, and showed a favorable stabilisation of the soft tissues promoted by the conometric system.

https://doi.org/10.3390/clinpract14020043

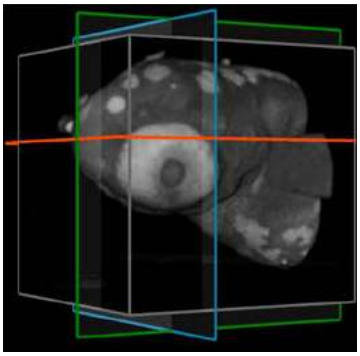


3D rendering of a subvolume of the peri-implant soft tissue as achieved after phase-retrieval 3D reconstruction. Used under a Creative Commons CC BY 4.0 license.

Ultrasound-induced sample reorientation for enhancing penetration depth in Optical Coherence Tomography

Dr. Mia Kvåle Løvmo, from the Medical University of Innsbruck, investigates how to overcome the high opacity of organoids to allow the use of Optical Coherence Tomography (OCT) for the investigation of their function. To this aim, at the **Austrian BioImaging Node**, she developed and tested an ultrasound-induced reorientation method for multi-angle-OCT, including a 3D-printed acoustic trap inserted into an OCT imaging system and an algorithm for the fusion of multi-angle data.

http://dx.doi.org/10.1038/s41467-024-46506-2



3D rendering of the reconstructed reflectivity map of the head section of a zebrafish embryo. Used under a Creative Commons Attribution 4.0 International License.

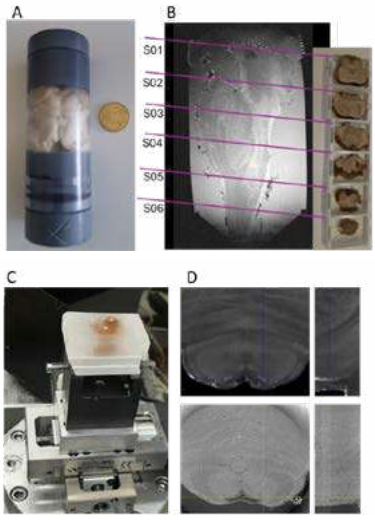
Dural lymphatic vasculature in Alzheimer's disease

Dr. Salli Antila, from the University of Helsinki, in collaboration with the the Kuopio Biomedical Imaging Unit of the **Finnish Biomedical Imaging Node**, studied how sustained atrophy or hyperplasia of the dural lymphatic vasculature affects blood–cerebrospinal fluid outflow and amyloid neuropathology in mouse models of Alzheimer's Disease. Anatomical MRI measurements were essential to monitor possible alterations of brain ventricular volume following the manipulation of the dural lymphatic vasculature.

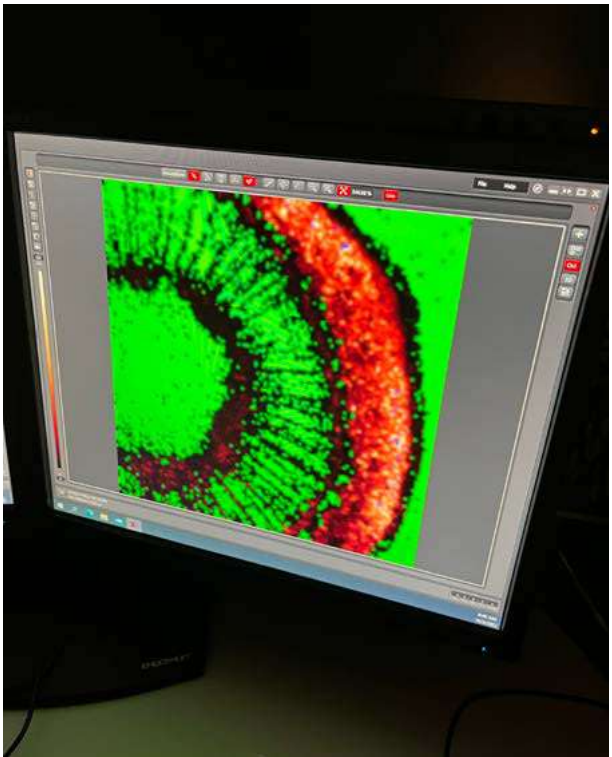
https://doi.org/10.1038/s44161-024-00445-9

Virtual histology for a multi-modal human brainstem atlas: mapping of the micro-vasculature with XPCT

X-ray phase-contrast micro computed tomography using synchrotron radiation (SR PhC-µCT) offers unique 3D imaging capabilities for visualizing microstructure of the human brain. In a recent publication in Frontiers in Physics, Dr. Gisela Hagberg and her colleagues from the University of Tübingen provide a detailed step-by-step guideline for imaging unstained human brain tissue at resolutions of a few micrometers with SR PhC-µCT, a protocol developed at SYRMEP, Elettra, Euro-BioImaging's **PCI Flagship Node in Trieste**.(https://doi.org/10.3389/fphy.2023.1335285). This protocol is being implemented in an ongoing project to map human brain microvasculature.



Multimodal imaging (above right) of the unstained human brain stem ex vivo. **A.** The entire specimen was scanned with MRI at 14.1T in cylindrical containers. **B.** Sectioning, dehydration and paraffin embedding was performed prior to **C.** XPCT image acquisition at SYRMEP, Elettra (Phase Contrast Imaging Flagship Node Trieste). **D.** Examples of coregistered MRI (top left:axial; top right: sagittal view) and XPCT images (bottom). Adapted from the article, used under a CC-BY license.

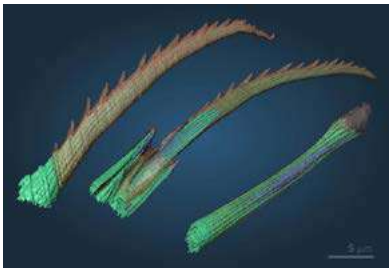


View of the FLIM data aquisition of a stem cross-section.

Photosynthesis in wooden plant parts

Dr. Sara Natale and her colleagues from the University of Padua studied the contribution of chloroplasts in bark and wood to photosynthesis and subscript production. Sara visited the **Wageningen Spectroscopy and Imaging Hub (WISH)** Node of Euro-BioImaging, supported by Italian User Access fund. Using Fluorescence lifetime imaging (FLIM), she found that younger stems contribute more to photosynthesis than older ones.

https://doi.org/10.1111/nph.19782

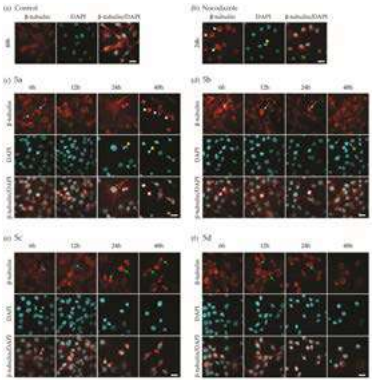


3D reconstruction of bristle segments, by Ilya Belevich, University of Helsinki. Used under a Creative Common CC BY license.

Nature's 3D printer - Formation of microscopic surface structures

Florian Raible and his team at the University of Vienna studied the formation of bristles on the surface of the marine worm Platynereis. Using Serial Blockface Electron Microscopy, performed by the EM facility at the University of Helsinki, **Finnish Advanced Microscopy Node**, they could show that the actin cytoskeleton and microvilli protrusions play a critical role in bristle formation.

https://doi.org/10.1038/s41467-024-48044-3

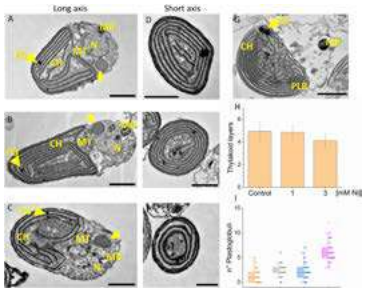


Time course of cell killing effect of compound 5c. Used under a Creative Common CC-BY license.

New chemotherapeutics for highly invasive breast cancer

Ruminana Tzoneva and her team at the Bulgarian Academy of Sciences, are developing new chemical compounds that target microtubules in highly invasive breast cancer cells, testing them using fluorescence microscopy at the **Bulgarian Advanced Light Microscopy Node in Sofia**. These new drugs aim to stop the cell growth and increase cancer cell death.

https://doi.org/10.3390/molecules29102400



Short axis view of algae cell. Used under a Creative Common CC-BY license.

Algae in the extremes

Some organisms, such as the red microalgae Cyanidioschyzon, can survive under extreme conditions - such as low pH, high temperatures, high heavy metal concentrations. The team of Joanna Kargul at the Solar Fuels Laboratory, University of Warsaw, worked with the experts at the **Polish Advanced Microscopy Node** using Electron Microscopy to characterise the algaes' adaptation to high concentrations of nickel.

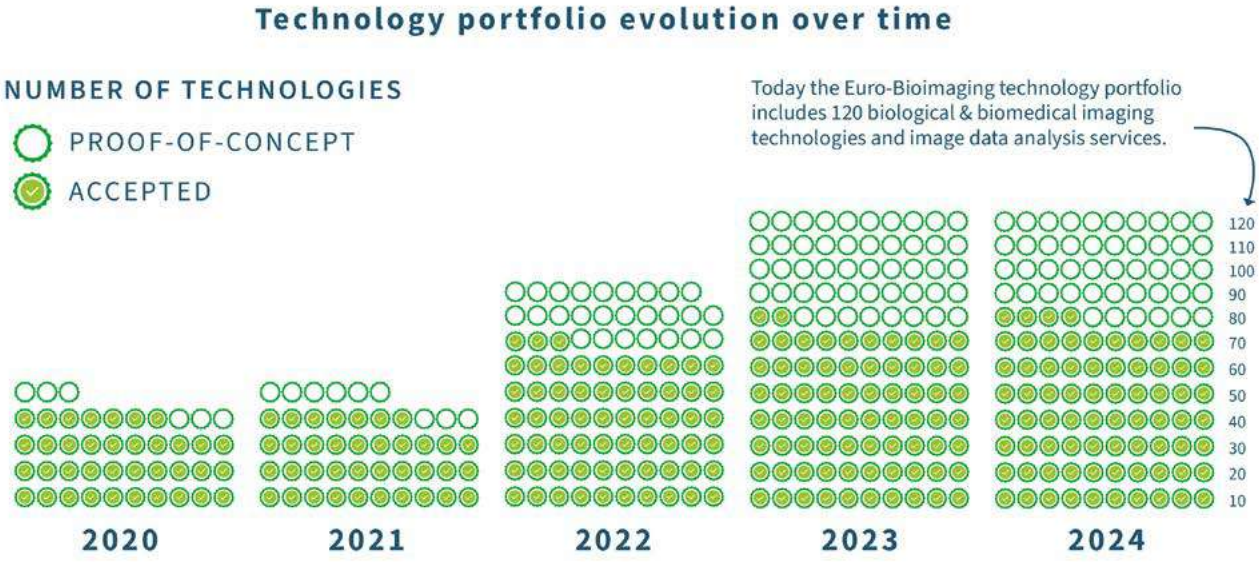
https://doi.org/10.1016/j.plaphy.2024.108365

INNOVATION

TECHNOLOGY PORTFOLIO

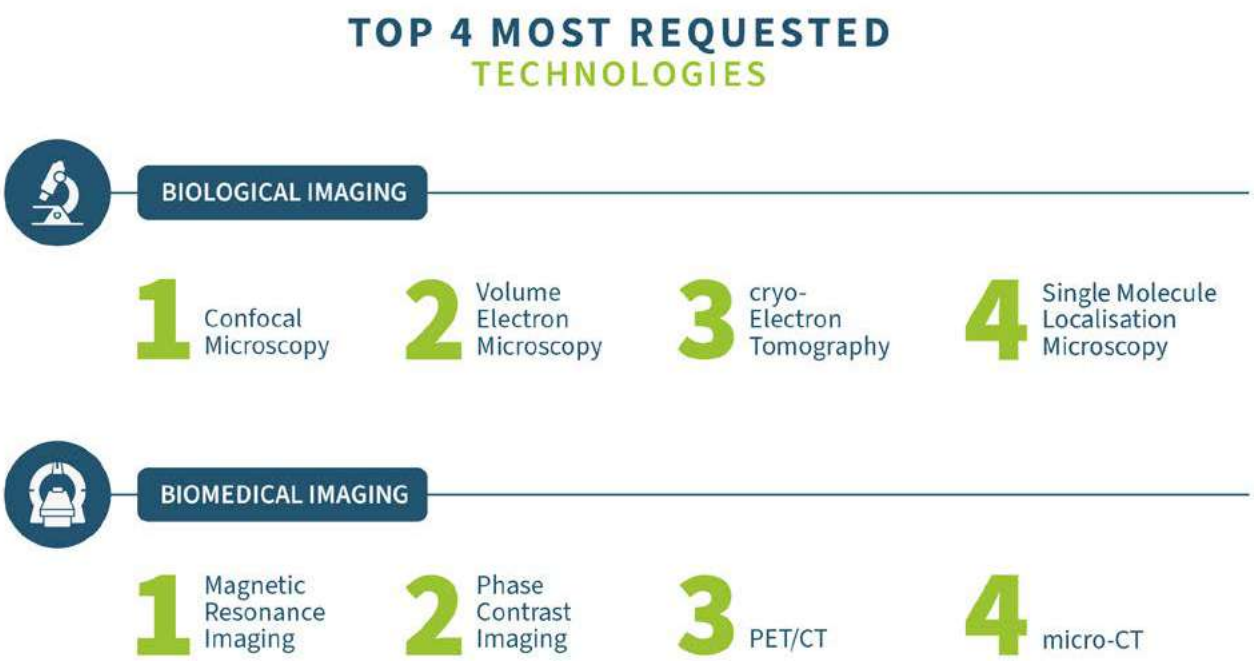
Innovation in imaging technologies in life sciences is continuous, fast, and exciting. To remain at the technological forefront, Euro-BioImaging has established a workflow to ensure that new technologies are continuously integrated into our portfolio. The expert imaging facility staff at the Euro-BioImaging Nodes are developing many new imaging methods and are making the latest developments available in open access. We make sure that these new technologies are quality-controlled and work appropriately in open access through our Proof-of-Concept study (PCS) process.

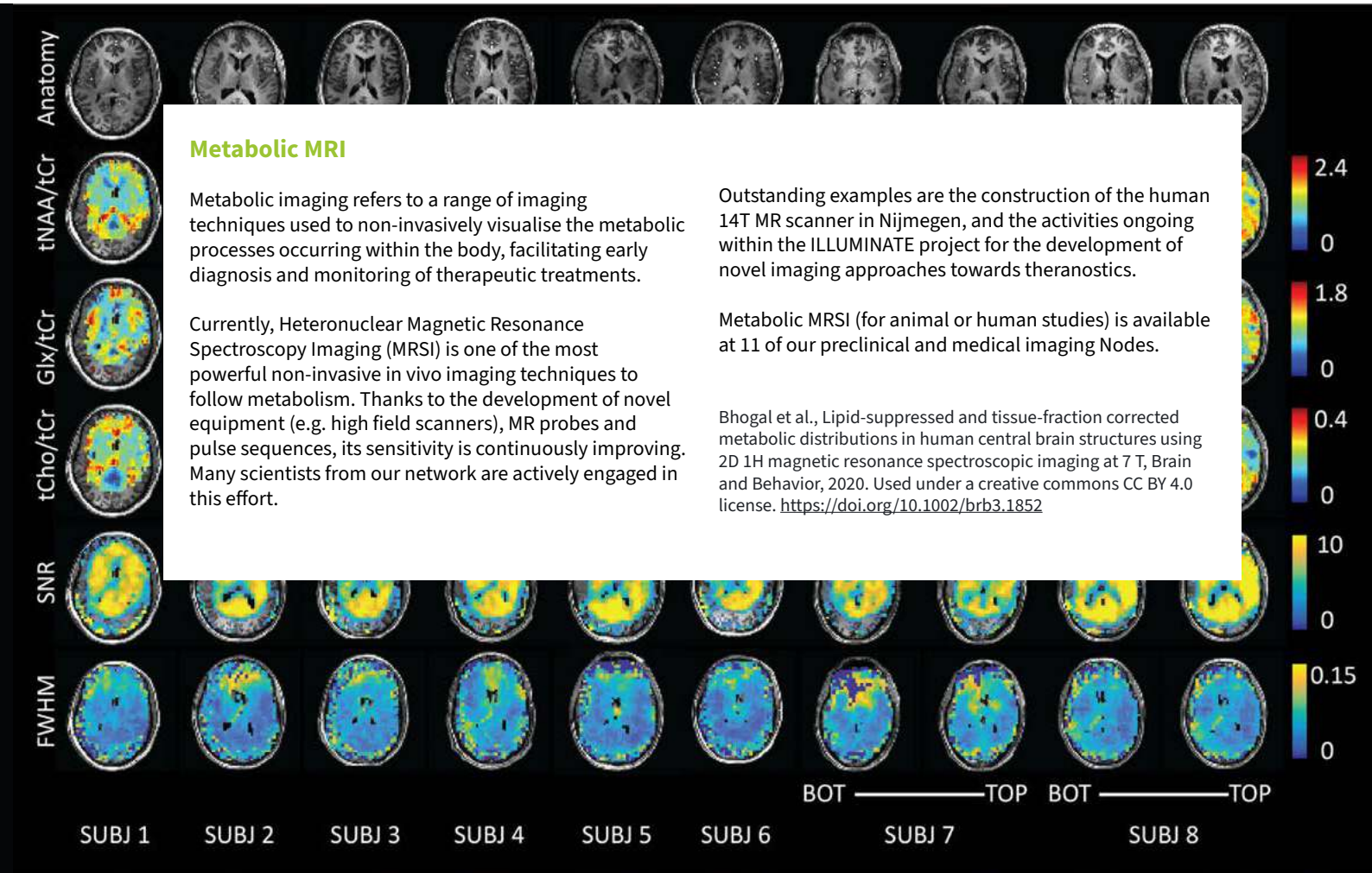
Through this process, the latest cutting-edge imaging technologies become available to all researchers.



TECHNOLOGIES OF THE YEAR

In the graphic below, we are pleased to report on the most requested technologies at Euro-BioImaging in 2024. Data source is the Euro-BIoImaging Web Portal (EWP).





Metabolic MRI

Metabolic imaging refers to a range of imaging techniques used to non-invasively visualise the metabolic processes occurring within the body, facilitating early diagnosis and monitoring of therapeutic treatments.

Currently, Heteronuclear Magnetic Resonance Spectroscopy Imaging (MRSI) is one of the most powerful non-invasive in vivo imaging techniques to follow metabolism. Thanks to the development of novel equipment (e.g. high field scanners), MR probes and pulse sequences, its sensitivity is continuously improving. Many scientists from our network are actively engaged in this effort.

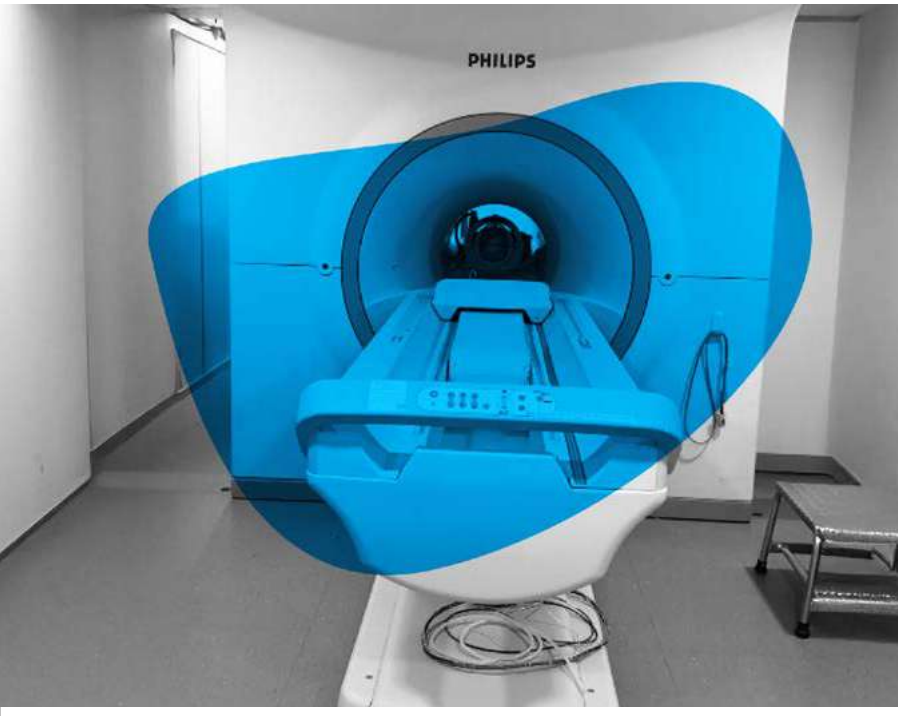
Outstanding examples are the construction of the human 14T MR scanner in Nijmegen, and the activities ongoing within the ILLUMINATE project for the development of novel imaging approaches towards theranostics.

Metabolic MRSI (for animal or human studies) is available at 11 of our preclinical and medical imaging Nodes.

Bhogal et al., Lipid-suppressed and tissue-fraction corrected metabolic distributions in human central brain structures using 2D 1H magnetic resonance spectroscopic imaging at 7 T, Brain and Behavior, 2020. Used under a creative commons CC BY 4.0 license. https://doi.org/10.1002/brb3.1852

THE ILLUMINATE PROJECT

Euro-BioImaging is thrilled to be part of ILLUMINATE (Increasing Lutetium production while leveraging metabolic imaging to enhance theranostics effectiveness), a pioneering public-private partnership collaborative research program funded by the Innovative Health Initiative (IHI) that combines imaging technology development with both pre-clinical and clinical research.



MR scanner. Image designed by Lygature for the Illuminate website. Used with permission.

With its two-pronged innovative approach, ILLUMINATE will significantly enhance the availability and use of theranostics in the clinical practice. First, the programme will contribute to improving imaging capabilities by implementing novel, highly effective and broadly applicable Metabolic MRI, mainly based on 31P-, 2D- and CEST (Chemical Exchange Saturation Transfer)-MRI, which are expected to improve insights into treatment responses, allowing better patient stratification and treatment personalisation.

Secondly, ILLUMINATE will help fortify the availability of Lutetium-177 (Lu-177), a highly promising targeted radioligand therapy recently approved by the European Medicines Agency (EMA) for metastatic prostate cancer, by improving its manufacturing process and developing sustainable production methods to help meet the general need for radioisotope-based therapies in the EU.

ILLUMINATE is a collaborative effort that gathers 15 partners from five countries: six industrial partners (imaging instrumentation and pharma), three Euro-BioImaging Nodes (two facilities from the Dutch High Field MR Node, three facilities from the MMMI Node, Italy, and one facility from the NMI Node, Sweden), two research organisations and an expertise centre for public-private partnerships.

In ILLUMINATE, Euro-BioImaging contributes to Work Package 5, “Patient and Public Engagement & Education for Healthcare Professionals and Scientists”, and Work Package 6 “Programme Management and Communications”, leading the task related to educational activities, and will enable the imaging modalities developed in the project to be accessible through the Euro-BioImaging web portal.

Project website

ILLUMINATE

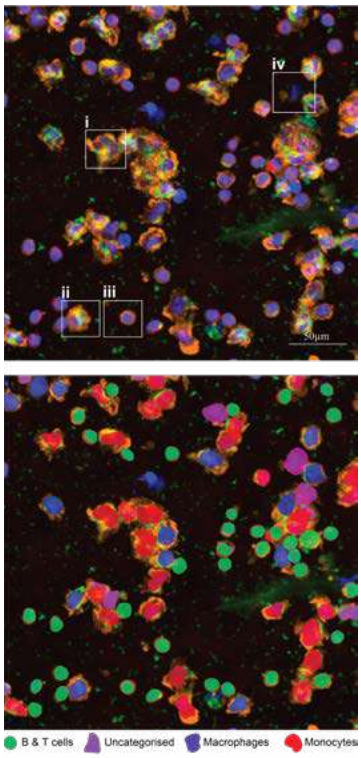
15
European partners in the consortium

21 million
budget in Euros (including in-kind contributions from industry)

4.5
years project duration

October 1, 2024
project start

TECHNOLOGY DEVELOPMENT AT OUR NODES

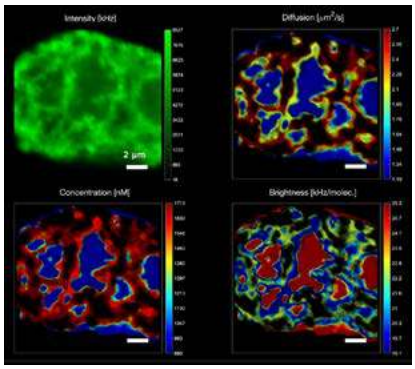


Cell classes based on morphology by expert annotations. Used with permission of the authors.

Blood Cell Painting for single cell analysis

At the FIMM High Content Imaging and Analysis Unit at the University of Helsinki, part of the **Finnish Advanced Microscopy Node**, experts in imaging and image analysis have adapted the Cell Painting Assay to blood cells to allow for morphological profiling and differentiation of various blood cell types. The proof-of-concept study was performed on peripheral blood samples from 390 healthy blood donors and was done in collaboration with the FINNGEN project and the Finnish Red Cross Blood Service. The developed technique enables automated high-throughput imaging and quantitative analysis of blood cells, facilitating applications in drug screening, disease diagnostics, and immune profiling.

https://www.biorxiv.org/content/10.1101/2024.05.17.594648v1



False-coloring of confocal data with molecular properties. Image courtesy of Jelle Hendrix.

Mapping Molecular Interactions in Cellular Environments

Prof. Jelle Hendrix from Hasselt University, part of the **Flanders BioImaging Node**, has been collaborating with ZEISS in the development of Spectral Raster Imaging Correlation Spectroscopy (RICS). RICS can provide information about the diffusion rates, concentration, and interactions of proteins or other particles in cells. The new analysis pipeline is now available as an integrated workflow in the ZEN software. Applying spectral unmixing with correlation analysis allows researchers to study protein-protein interactions with higher spatial and temporal resolution in live cells.

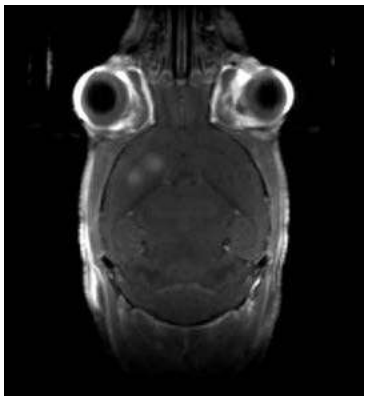
New lasers for label-free imaging and diagnostics of bladder cancer

The AMPLITUDE project - an EU funded project (GA#871277) - concluded in 2024 with the development of new multi-modal imaging tools for faster, more accurate bladder cancer diagnosis.

The key advantage of the new laser system and microscope integration is deeper tissue penetration than traditional spectroscopy tools, improving cancer stage detection. The imaging experts at ICFO, part of the **Barcelona Mesoscopic and Super-resolution Nodes**, contributed to the project by integrating and testing an ultrashort pulsed laser in a multi-modal microscopy setup, validating its potential for clinical diagnostics. Experts from the **Italian Advanced Light Microscopy Node** (University of Florence) and **Cellular Imaging Hungary** (Femtonics) were also active partners in the project, highlighting cross-Node collaboration on technology innovation.

Focused US protocols for opening the blood-brain barrier

The Lund University Imaging Center at the **Swedish NMI Node** expanded its capabilities with the installation of a focused ultrasound (FUS) add-on, fully compatible with MR imaging. In 2024, the platform's research efforts concentrated on establishing FUS protocols for optimizing the system for blood-brain barrier opening, for facilitating targeted drug delivery to brain tumors. Initial in vivo protocols have been successfully established, and research is now progressing towards applications in disease models.



Blood brain barrier opening in healthy mouse visualised with contrast uptake in the left cortical area.

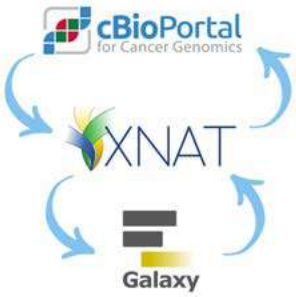
Dynamic PET/CT imaging over 0–60 min of a female Sprague-Dawley rat withthe Al[18F]-RESCA-RSA radiotracer infused intrathecally into the cisterna magna.

A Novel Fluorine-18 PET tracer

The Radiopharmaceutical Chemistry service (RadChem) of the in vivo Animal Imaging Platform at the University of Helsinki, **Finnish Biomedical Imaging Node**, developed a 18F-radiolabeled rat serum albumin-based radiotracer to serve the needs of preclinical imaging studies of the glymphatic system in rodents. The function of the glymphatic system has great therapeutic potential in the treatment of neurodegenerative disease, brain tumors and other CNS disorders, but investigations have been limited to invasive imaging methods as no dedicated PET radiotracers had been previously developed. The new tracer Al[18F]-RESCA-RSA allows for intrathecal administration with minimal disturbance to the cerebrospinal fluid flow in ultra-low volumes.

Medical image data interoperability

In 2024, the Medical Imaging Repository service (XNAT) of the **Population Imaging Node Rotterdam** received upgrades in interoperability and connectivity to other types of data and platforms. For example, data connectivity was implemented between XNAT and Galaxy in the context of a ISIDORe JRA, and in EOSC4Cancer a linkage between data in cBioPortal and XNAT was established: imaging data can now also be inspected in an embedded fashion from cBioPortal. Furthermore, in EUCAIM and EuCanImage, metadata models have been developed that can feed data entries of datasets stored in XNAT to a catalog through a Fair Data Point, and the XNAT service is now one of the EUCAIM "reference nodes," officially supported platforms for storing data in the European Cancer Imaging Repository.



WORKING WITH INDUSTRY

Innovation flourishes where academic research meets industry needs, especially when SMEs and startups contribute fresh ideas, specialised skills, and entrepreneurial energy to complement the scientific expertise and infrastructure of research organisations.

At Euro-BioImaging, our broad portfolio of advanced imaging technologies and diverse Node profiles enables us to support research across key scientific areas, helping companies—particularly in pharma and biotech—de-risk R&D by providing access to cutting-edge equipment and expert support. Despite this strong value proposition and increasing encouragement from institutions and funders to collaborate with industry, only about 10% of Euro-BioImaging users across all Nodes are currently from the private sector.

Euro-BioImaging sets out to work on attracting more commercial users and empowering all interested Nodes to provide services to industry, while remaining aligned with the individual mission of the Node-hosting organisations and ERIC statutes. In 2024, we have started to seek out strategic partnering opportunities that not only raise visibility of research infrastructures and Euro-BioImaging in particular to companies, but also link Euro-BioImaging to innovation funding opportunities.

Policy makers, research infrastructures and business associations

On 7th June, we co-organised a workshop together with other infrastructures Alba Synchrotron, Elixir, ESRF and INESC in Brussels, focused on improving SME access to European research and technology infrastructures.

During the event - which was later reflected in the European Commission's future strategy on infrastructures - stakeholders from research, business and the European Commission discussed how to remove barriers such as low visibility, accessibility, service-fit and funding.

The workshop also strengthened Euro-BioImaging's ties with innovation ecosystems and Life Science clusters in Europe, further raising the visibility of its services.

Participants in the "Enhancing SME Access to European Research and Technology Infrastructures: A Pathway to Innovation & Growth" workshop in Brussels on June 7, 2024.

Active matchmaking at the EIC event.

Innovators, funders and Nodes

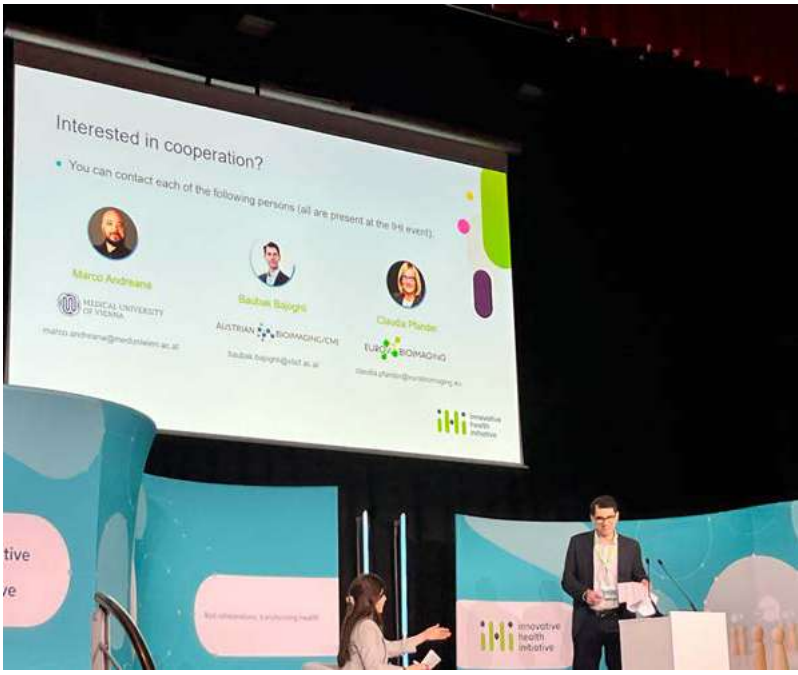
Euro-BioImaging has set up a strategic partnership with the European Innovation Council (EIC) to connect its Nodes to innovators across Europe and encourage the use of research infrastructure services by grantees. EIC beneficiaries, besides their original grant funding, have access to a number of so-called Business Acceleration Services (BAS) to support their development, which include access to infrastructure to validate or scale-up their innovation. Euro-BioImaging has successfully applied to be listed in the service catalogue, raising visibility and making our services eligible for grants of up to 60K Euros through the newly launched EIC Access+ programme.

The EIC together with Euro-BioImaging and the **Flanders BioImaging Node** organised a one-day matchmaking event at KU Leuven to bring together imaging experts, clinicians and innovators from the EIC Accelerator programme for start-ups and SMEs to explore future collaboration opportunities in the field of cardiology and clinical imaging. A close relationship with EIC Programme Managers, including the possibility to organise further targeted matchmaking events, opens the door for collaboration with Europe's top innovators.

Pharma, MedTech and European Partnerships

Four Euro-BioImaging Nodes - **UK Node, Austrian BioImaging**, **Flanders BioImaging Node** and **Radiology and Medical Imaging Valencia Node** - participated in a 2-day brokerage event of the Innovative Health Initiative (IHI) in Brussels. The event connected research institutes, industry, and SMEs through "pitching sessions," where project proposals were presented to potential partners to build consortia and realise innovative ideas. Our Nodes presented project ideas aimed at improving diagnosis, therapy, and patient care, covering areas like digital pathology, AI-supported immunotherapy monitoring, and biomarker discovery, and networked with pharmaceutical and imaging companies.

Industry feedback on the pitches from our Nodes was very positive, underscoring the scientific excellence and potential impact of our facilities in health research. The event provided valuable insights into industrial R&D priorities and facilitated the establishment of new industry relationships.



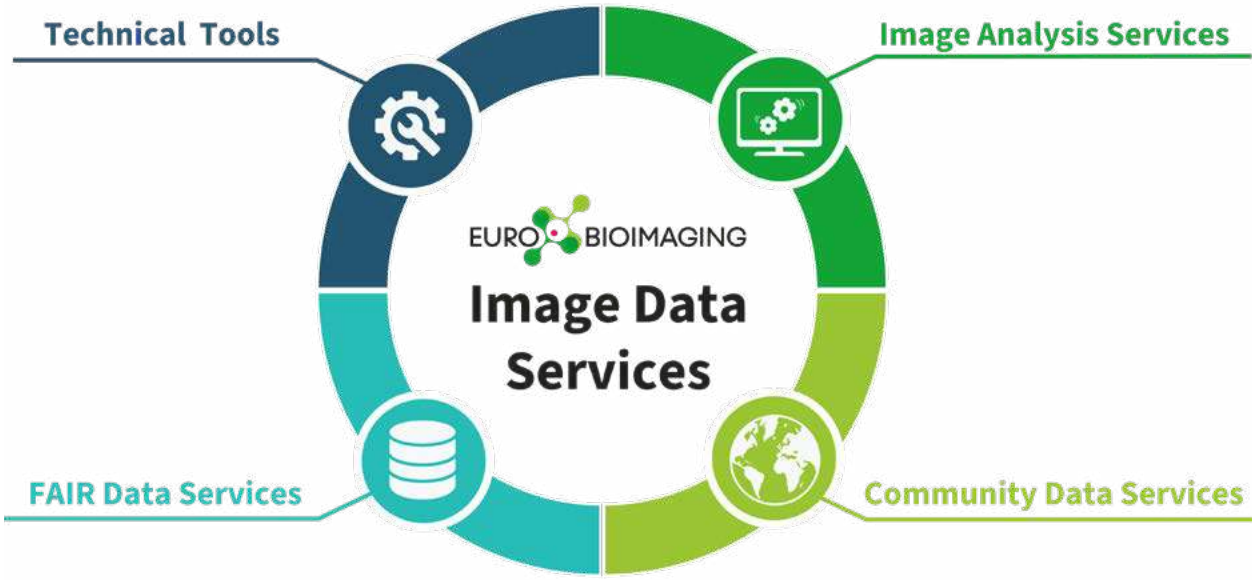
Austrian BioImaging Director, Baubak Bajoghli, gives a "pitch" presentation at the IHI event.

DATA SERVICES

OVERVIEW

Euro-BioImaging provides comprehensive Image Data Services designed to support the production of high-quality data, robust analysis methods, an extended data life cycle and a strong community to develop and support such practices.

Through our Image Data Services, we serve the entire imaging community by facilitating the adoption of FAIR (Findable, Accessible, Interoperable, and Reusable) principles in image data management and analysis workflows. Collaborating closely with our expert Node staff, we provide solutions, resources, and trainings to ensure that imaging data is utilised to its fullest potential. By integrating community driven technical solutions and cutting-edge tools, Euro-BioImaging supports both researchers and service providers. Our commitment to strengthening the imaging community builds relevant connections to policy initiatives to bring meaningful and lasting change.



Technical Tools:
Our expert staff develops tools and libraries that bring community recommendations on metadata, quality control and file formats, to researchers in a functional format, coupled with training and outreach on the topics.

Image Analysis Services:
Our nodes provide image analysis support to researchers and industry users, develop and maintain image analysis tools and libraries and promote FAIR image analysis practices, including through training efforts.

FAIR Data Services:
Our image data stewardship takes the form of individual support, general guidelines, training and self learning materials as well as high impact publication to bolster the practical and policy requirements for image data FAIRification.

Community Data Services:
Our steps towards strengthening the image data community include running expert groups, interacting with global communities, influencing policy, like through the EOSC, and mediating coherent development through projects.

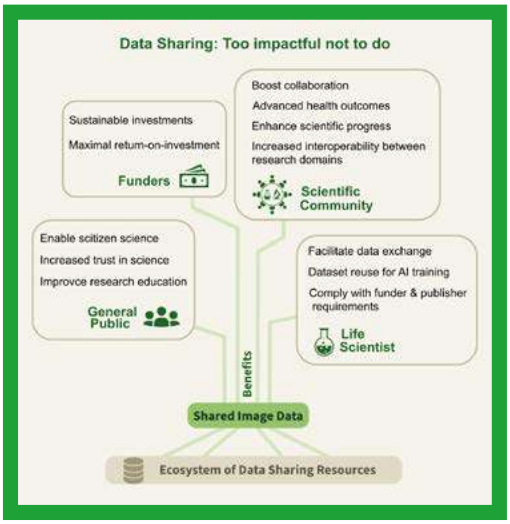
COMMUNITY DATA SERVICES

Euro-BioImaging serves as a central coordinating point, participating in various community initiatives and consolidating their efforts across the global landscape. We represent the needs and interests of the image data community towards European funding and policy agencies, like through our membership in the EOSC Association, its task forces, and our contributions towards forming the EOSC Federation. We also raise the visibility of image data research by participating in various cross-domain data projects.

Building the EOSC Federation

The European Open Science Cloud is envisioned as a Web of FAIR Data and Services. It aims to provide a trusted virtual environment making digital infrastructure, together with thematic data and services, accessible to researchers across disciplines. It strongly underpins Open Science by providing core functionalities allowing integration of data and service provided by various EOSC Nodes.

Euro-BioImaging together with partner Research Infrastructures, Elixir, EMBL and Instruct, is supporting the EOSC Federation by forming a Life Science Research Node. This thematic Node will open up life science, including imaging, data, tools, software and the underlying infrastructure to exploit these resources, to all researchers. It will also promote and incentivise adoption of practices to increase the interoperability of data and services across domains. Euro-BioImaging aims to remain at the forefront in establishing the Federation paving the way for our Nodes and other research infrastructures.



Publication: Towards Global Image Data Sharing

Euro-BioImaging members contributed to an international ad hoc working group that published a paper on “Enabling Global Image Data Sharing in the Life Sciences”. The paper, published in Nature Methods, presents a guided and clear checklist of key recommendations as a roadmap for implementing a global image data sharing ecosystem. This will help to maximise the value of existing image data in the life and health sciences, while also preventing significant financial losses from past investments in image acquisition infrastructures.

DOI: 10.1038/s41592-024-02585-z

IMAGE DATA ANALYSIS SERVICES AT NODES

To support production of quality data, analysis methods and an extended data life cycle, Euro-BioImaging offers Image Data Services for the benefit of the whole imaging community. Together with our expert Nodes staff, we support adoption of practices that yield FAIR (Findable, Accessible, Interoperable and Reusable) image data and analysis workflows. In addition to directly supporting users with analysis of their data, many of the Bioimage Analysts at our Nodes are involved in developing and actively maintaining Open image analysis tools and libraries, which serve Euro-BioImaging users as well as the global scientific community.

~ 277

FTE staff members provide image analysis and image data management services at Euro-BioImaging Nodes

Image analysts at our Nodes are active in training. Here's a photo from an Image analysis course offered by our BMIN Node in Barcelona.

24

requests for biological and biomedical image data analysis as a stand-alone service at Euro-BioImaging Nodes in 2024

The Danish BioImaging IACF team discusses tool development.

Publication: F-BIAS: Towards a distributed national core facility for Bioimage Analysis

France-BioImaging has 26 FTE image analysis staff members in the different facilities that make up the Node. These image analysts work together as a distributed team called F-BIAS, to deliver image analysis services to French researchers. A pre-print article released in 2024 and published in 2025 explores the creation and organization of this national core facility for bioimage analysis, in order to promote the creation of similar structures in other national communities. The article explores themes such as how to provide scientific value to its members, and how to build a virtual, remotely-operating core facility that offers consultations and collaborative project services. Check it out for some interesting insights!

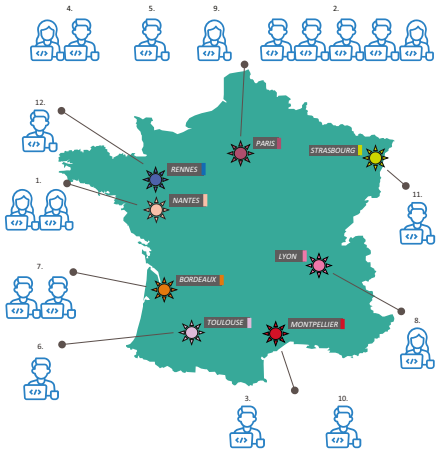


Figure 1 from "F-BIAS: Towards a distributed national core facility for Bioimage Analysis" (https://doi.org/10.1371/journal.pcbi.1013058). Used under a CC-BY 4.0 license.

TECHNICAL TOOLS

Euro-BioImaging provides technical support through the development of tools and workflows to facilitate the management and analysis of FAIR image data. These tools support the discovery, organisation, and sharing of preclinical imaging datasets, including quality control, annotation, and streamlined data uploading. In addition, we develop software and workflows promoting the use of community supported Next Generation File Format (NGFF) OME-Zarr, and drive community outreach and adoption by participating in Hackathons and technical events.

Preclinical image dataset management

PIDAR : Preclinical Image DAtaset Repository

- Public repository of metadata describing preclinical image datasets from any imaging modality.
- Emphasizes the inclusion of rich contextual metadata such as information about the study component, experimental procedures, image acquisition, and more to support the ability to discover, interpret, and reuse imaging data by researchers.
- Currently contains 19 studies with curated metadata.

Check out
PIDAR

XNAT-PIC : XNAT for Preclinical Imaging Centers

- Open-source desktop application for Windows.
- Improving the FAIRness levels of preclinical imaging datasets.
- Optimizing the management of experimental data by facilitated converting to DICOM data, annotation and uploading of image datasets to the XNAT platform for sharing and processing image data, focussing on the specific requirements and structure of preclinical imaging studies.

Check out
XNAT-PIC

Supporting community file formats

A subset of tools developed by Euro-BioImaging support the use of open file formats for bioimaging data. Among these formats is OME-Zarr, which is rapidly becoming a new standard in the bioimaging community and is attracting a growing user base. Our tools facilitate the adoption of these formats by enabling the conversion of large datasets from various proprietary formats, as well as the efficient processing of data already stored in open, standardised formats. By developing these tools and making them easily accessible and installable via package management systems, like Conda, Euro-BioImaging actively promotes compliance with FAIR principles and adds key functionality to the pool of open source tools maintained by the community.

Tool development and distribution

The number of installations of our tools is growing indicating both the need to use such tools and the acknowledgement of Euro-BioImaging as a contributor of such technical solutions. In 2024, the release of EuBI-Bridge, a python package for parallalised conversion to OME-Zarr, was a key highlight, as the multidimensional concatenation functionality was much requested by the community. The tool has been well received by the community.

Find our Anaconda package registry here:

anaconda.org/Euro-BioImaging

Find our GitHub page here:

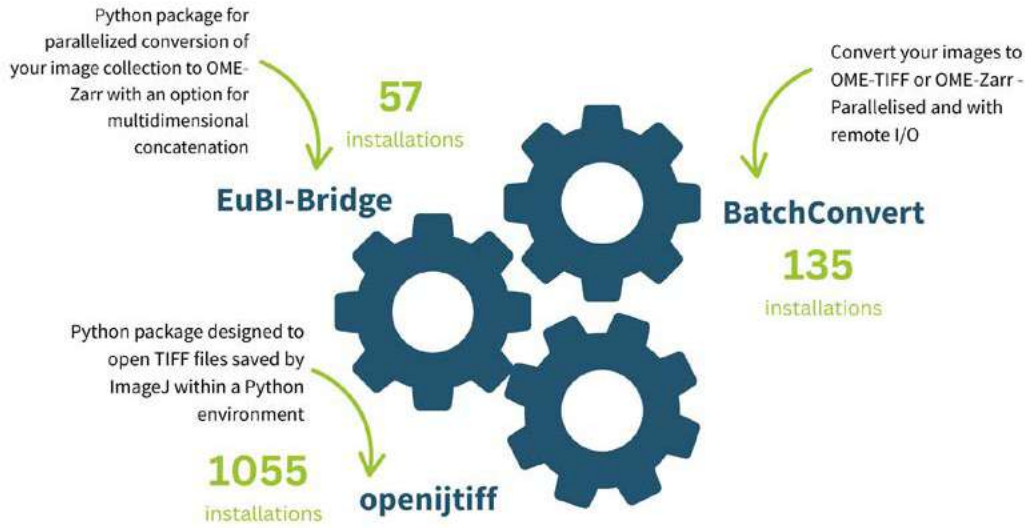
github.com/Euro-BioImaging

Over

1,200

installations of Euro-BioImaging tools in 2024

Development and Maintenance of Tools for Image Data Management and Analysis



Engaging technical communities

Hackathons and relevant publications

Actively participating in Hackathons is one way we stay connected to the developer community, raise the visibility of Euro-BioImaging outputs and contribute to common community projects. Hackathons help us understand the needs of the community and keep us updated in terms of latest developments and innovations.

Photo by Joel Lüthi,
BioVisionCenter, UZH.

"OME-NGFF Workflows Hackathon", **organized by the BioVisionCenter, Zürich** addressed the efficient use of OME-Zarr datasets in image analysis workflows.

"Image Analysis in Galaxy" hackathon was held in February 2024 at the University of Freiburg (Germany).

One of the outcomes of the **"Enhancing the image analysis community in Galaxy"** hackathon was that the conversion tool developed by Euro-BioImaging ("Convert to OME-Zarr with Bioformats") was deployed to Galaxy.

Photo by Sebastian Munck,
VIB Imaging Core, Flanders BioImaging Node.

"Towards Composable Modules for Standardized Analysis Pipelines in Nextflow", **organized by our node VIB Bioimaging Core, Leuven** gave us the opportunity to reinforce our collaborations with our Belgian node, with whom we co-developed re-usable Nextflow modules.

Relevant publications

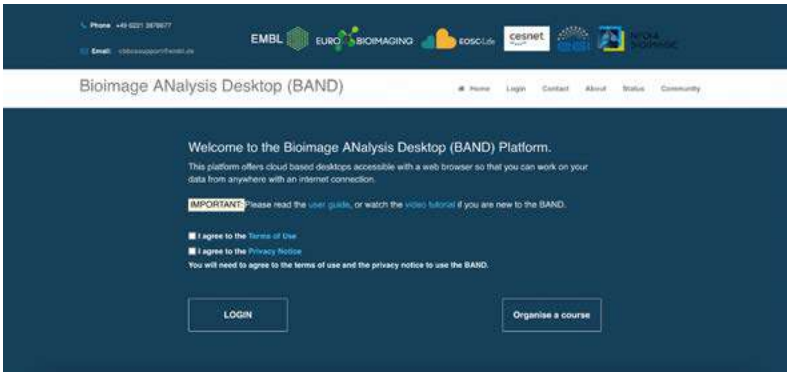
- Our collaborative efforts at the OME-NGFF Workflows hackathon led to the following preprint.
- Find an overview of the outcomes of the Enhancing the image analysis community in Galaxy hackathon in this preprint.

Remote desktop

In 2024, Euro-BioImaging provided continued support and promoted community adoption of the BAND (BioImage ANalysis Desktop), a Desktop-as-a-Service cloud-based platform that generates a desktop environment packed with bioimage analysis tools. The BAND was developed as part of the Euro-BioImaging involvement in the EOSC-Life project (Grant Agreement No: 824087) by Jean-Karim Heriche and Yi Sun from EMBL and borrows components developed for the Australian MASSIVE facility.

The idea behind the BAND is to allow remote, interactive human-in-the-loop workflows involving the use of some of the most popular image analysis tools. The ability to preconfigure desktops with desired versioned tools makes BAND an ideal candidate for training courses and is widely use by Euro-BioImaging Nodes. In addition to image analysis software, the BAND also features notebooks with GPU-enabled kernels.

As of 2025, a new instance of the BAND supported by Euro-BioImaging is run on compute resources provided by EGI through their CESNET Node. This instance will provide additional capacity for users at Euro-BioImaging Nodes and globally to access a battery of essential image analysis tools. Dedicated training sesssions can also be planned using the BAND desktop, in which case resources are rserved specifically for training purposes.



The BAND Desktop Service can be used by the entire imaging community to support training courses. Check it out here.

Case study

Within the framework of the eRImote project (Grant Agreement No: 101057557), Euro-BioImaging Hub in collaboration with France-BioImaging, PPBI and Swedish NMI, developed and implemented an innovative training course concept. The model involved connecting participants and trainers at three distinct sites via Zoom and deploying the BAND remote desktop so students could get hands-on experience with Python for bioimage analysis in the same environment across sites. Overall, 39 students participated in the course, and the course was a resounding success. Future iterations and an expansion of this course to more sites is planned for next year as part of the further development of advanced hybrid training formats by Euro-BioImaging supported by the EVOLVE project.

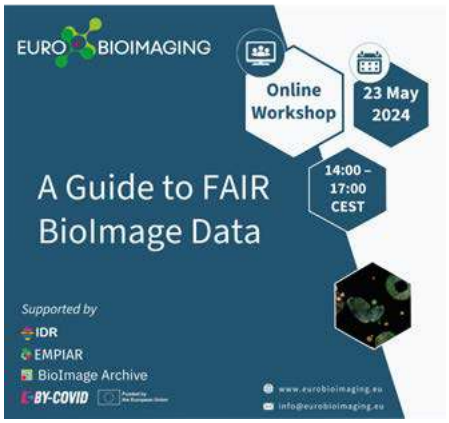
FAIR DATA SERVICES

The FAIR principles accelerate scientific progress by enabling data to be more readily incorporated into research projects, improving transparency and boosting scientific collaborations. One of Euro-BioImaging's missions is to promote and facilitate the adoption of FAIR practices relevant to image data. To this end, we offer guidelines, training and direct, one-on-one support to users for producing open, FAIR image data.

Providing FAIR training

In 2024 we once again hosted the online workshop "Euro-BioImaging's Guide to FAIR BioImage Data". This year, in addition to a theory-based overview of the FAIR principles and repositories, we've introduced a series of practical and interactive exercises to provide hands-on experience of various aspects of FAIR bioimaging data. With 123 participants in 32 countries from all around the globe, we were thrilled to see so many people interested in this important topic.

Euro-BioImaging's Guide to FAIR BioImage Data



> *They [the practical exercises] were absolutely fantastic to put in practice what we learnt and interact with people.*
>
> Workshop participant

Learn more about FAIR data services

FAIR Cookbook recipe

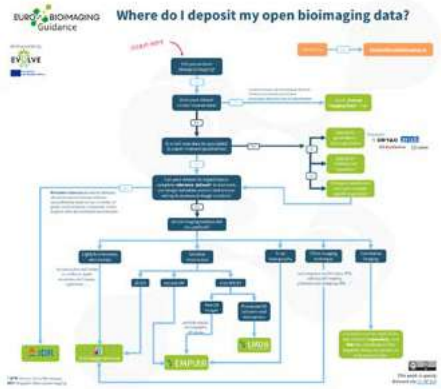
One of the critical aspects of data sharing is data deposition, which is often not as straightforward as it needs to be for rapid data exchange. We have therefore created a step-by-step process for depositing bioimage data in the BioImage Archive.

https://faircookbook.elixir-europe.org/content/recipes/applied-examples/BIA_submission.html

FAIR image data decision tree

For guidance in the selection of appropriate repositories, we have created an overview of available repositories, including their scope and requirements, for different types of imaging data. This decision tree guides you through questions about your data and directs you to the correct repository.

https://zenodo.org/records/13945179



Highlight: Celebrating the completion of BY-COVID project

The BY-COVID project was set up to learn from the technical gaps that hampered the ability to study SARS-CoV-2 in the early stages of the pandemic by bringing together and coordinating scattered datasets from different sources, and developing resources, data standards and guidelines to enable rapid response to emerging threats.

We look forward to organisations also outside the consortium using, contributing to and maintaining the data ecosystem created by BY-COVID. The established resources and pipelines may serve as a demonstrator for other major challenges that require access to distributed data such as biodiversity and food security.

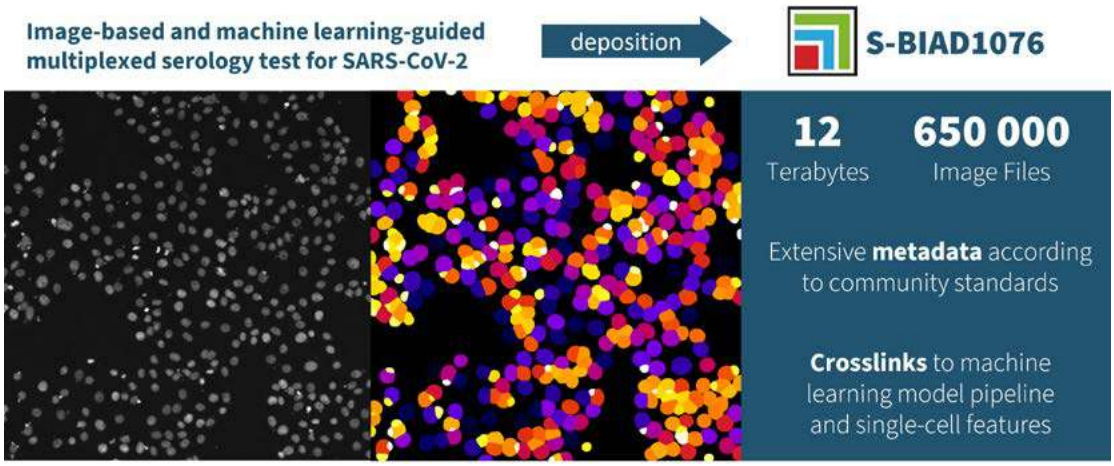
We consider BY-COVID to be truly transformative, as the project has allowed us to establish a Euro-BioImaging Data Steward position, produce tangible guidelines for handling FAIR image data, and strengthen Euro-BioImaging's relationships and interactions with other research infrastructures.

Check out
the BY-COVID outcomes

Showcase: making infectious diseases data available

As a result of our data steward's work in the BY-COVID project, the complete dataset including raw images and segmentation masks of a mini-immunofluorescence assay to detect SARS-CoV2 from our **Finnish Advanced Microscopy Node** is now available for anyone to view and reuse on the BioImage Archive.

Read
the article



Isabel's *[FAIR Image Data Steward]* **biggest help** was initially filling the **metadata documents** since the most time consuming step in data deposition was **designing the deposition** and then putting all metadata together. I would not have deposited the data without the involvement of the Euro-BioImaging Hub.

Lassi Paavolainen, Euro-BioImaging Finnish Advanced Microscopy Node

IMPACT

STRATEGIC ASSETS FOR EUROPE'S FUTURE

In the fast-evolving world of today, Europe's ability to generate knowledge, innovate responsibly, and respond swiftly to societal and environmental challenges depends on a robust, coordinated, and forward-looking research infrastructure landscape. Across the European Research Area, ERICs are increasingly recognized not just as enablers of excellent science, but as strategic assets underpinning Europe's autonomy, competitiveness, and resilience. In 2024, the European Commission reaffirmed this vision, and Euro-BioImaging contributed to the development as part of dedicated expert groups

The revised Charter for Access to Research Infrastructures highlights the EU's commitment to open science, inclusiveness, and the FAIR data approach, and it ensures that RIs remain adaptable and accessible to a broad range of users — from researchers and innovators to SMEs and industry.

Research Infrastructures - such as Euro-BioImaging ERIC - are strategic assets for Europe's future

At the same time, the EU sharpened its focus on **Technology Infrastructures (TIs)** — facilities that enable testing, scaling, and deployment of emerging technologies.

TIs aim to bridge the gap between research and market-ready solutions, supporting Europe's green and digital transitions. In contributing to the Commission's guidance on TIs, Euro-BioImaging via ERIC Forum helped build synergies with the broader RI ecosystem.

Together, these developments signal a shift in the European perspective: from viewing RIs as standalone entities to recognising them as interconnected platforms for European value creation. ERICs, with their proven governance models and cross-border service delivery, are already showing how national investments can be coordinated strategically to serve the whole of Europe. As the EU prepares its next Framework Programme (FP10), it is vital to build on this momentum. The **ERIC Forum** continues to call for funding mechanisms that reflect the full scope of RI services — from physical and remote access to digital transformation and environmental sustainability. By ensuring the long-term operation and innovation capacity of existing infrastructures such as Euro-BioImaging, Europe can maximise returns on past investments and ensure equitable access for all its researchers.

Perspective written by Antje Keppler

COMMUNITY

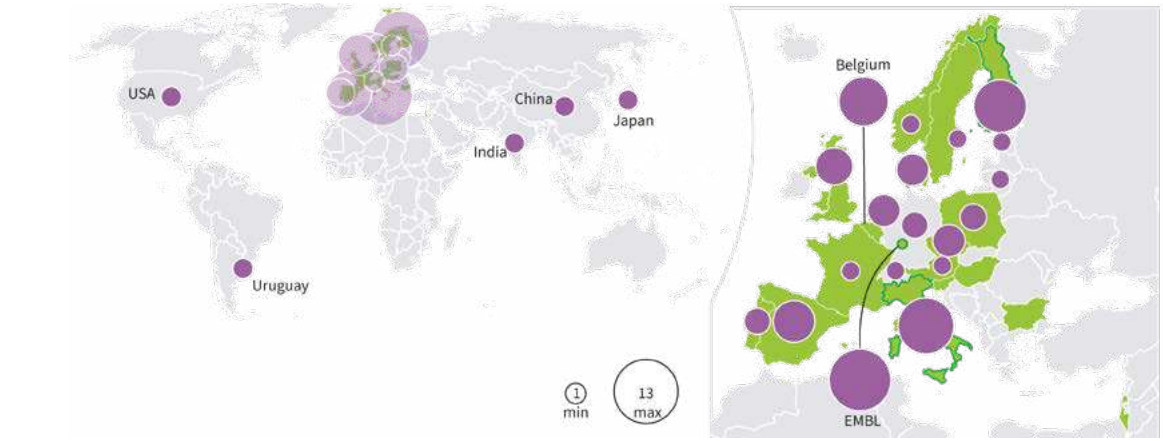
Euro-BioImaging works closely with an extensive and varied network of stakeholders, including the scientific community, our community of Nodes, our Research Infrastructure partners, the European Commission, our member states, and funding agencies, among others. Through our actions with different stakeholder groups, we are involved in a number of activities that bring added-value for research, innovation, technology development, and strengthen the overall competitiveness of the European Research Area.

Of course, a significant focus in our activities is placed on connecting with the scientific community - ensuring that more and more researchers are aware of the opportunities offered by Euro-BioImaging. In 2024, we engaged with the scientific community at 79 conferences & community events - a record number! Our actions were concentrated in Europe, as the map shows, but also extended beyond European borders. In addition, Euro-BioImaging was quite active at policy events and EC project meetings in 2024, as the bottom map shows. Learn more about our attendance at global policy events in the international stakeholders section (see p. 60-63) and our involvement in EC projects in the funded projects section (see p. 66).

Euro-BioImaging participation in externally organized community-oriented events & conferences, in-person 2024

Total amount of events attended per country

non-member member hub



Euro-BioImaging participation in ● policy events and ● EC project meetings, in-person 2024

Total amount of events attended per country

non-member member hub

AI4Life Hackathon, Madrid

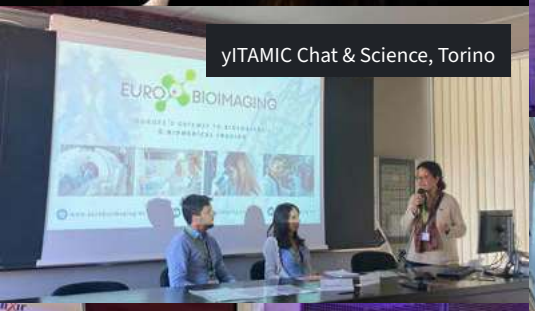
ANERIS General Assembly, Seville

Viruses: New Insights from Microscopy Techniques, Heidelberg

FEBS Congress, Milan

EACR, Rotterdam

European Researcher's Night, Torino



yITAMIC Chat & Science, Torino

European Research & Innovation (R&I) Days, Brussels

ECCB, Turku

Node visit, Brno

EMIM, Portugal

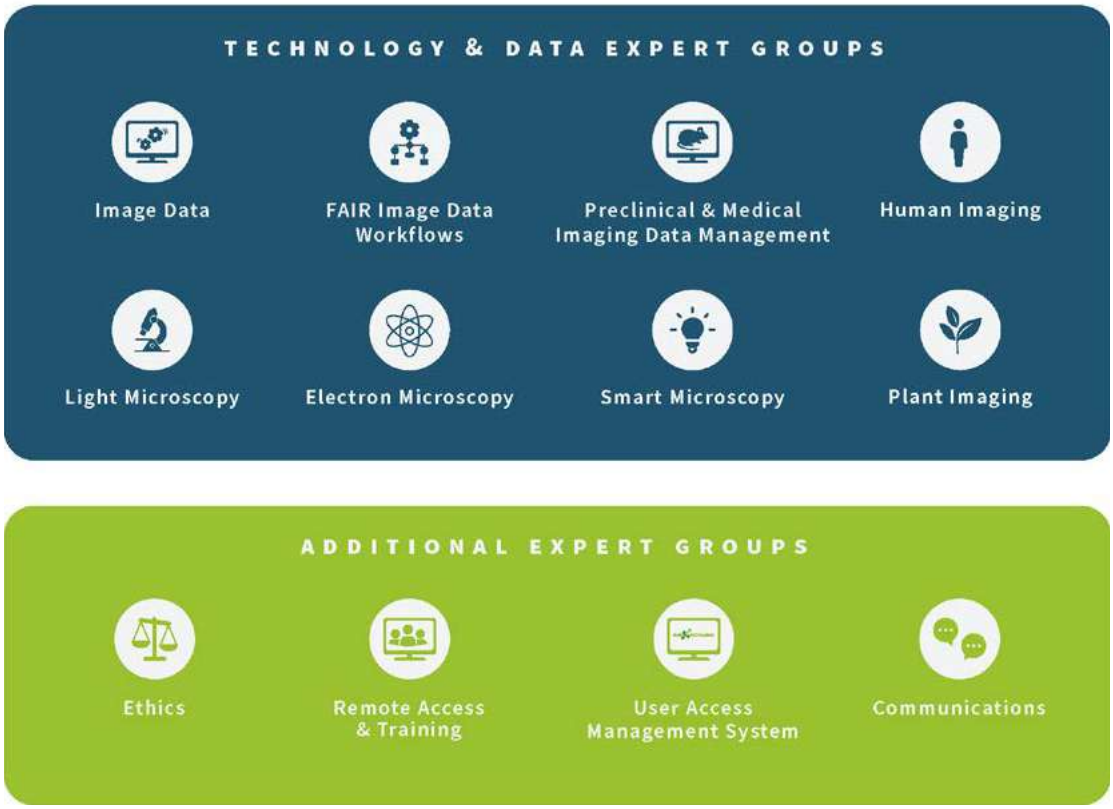
iGEM, Turku

France-BioImaging Annual Meeting, Strasbourg

ELMI 2024, Liverpool
Photo by RMS

Danish BioImaging Symposium, Copenhagen

EXPERT GROUPS



Euro-BioImaging organises a wide range of topic-oriented Expert Groups, to increase collaboration and connections between our Nodes and give the core facility staff of our Nodes the opportunity to share and advance their knowledge on many relevant topics. Several of the Expert Groups are also open to the wider imaging community - including Euro-BioImaging friends, partners, Euro-BioImaging Industry Board members and more.

Full body PET. Photo courtesy of Portuguese BIN Node.

In 2024, a new expert group dedicated to exchanging experiences and best practices across the Euro-BioImaging facilities when dealing with **Human Imaging** was created following a request from our medical imaging Nodes. The aim of the group is to discuss the most typical difficulties that are encountered in clinical studies, e.g. international user access limitations, ethical and legal implications, protocol harmonisation across Europe, data formats, management and sharing. The group welcomes Nodes' staff working with all human imaging technologies or clinical image data and is currently working on a white paper to provide recommendations about the issues listed above.

> *The Euro-BioImaging expert groups are an excellent way for Node staff to get involved in the Euro-BioImaging community, through topics of interest. Each group holds regular, online meetings. From technical experts to image data analysts and managers, there are topics for everyone!*
>
> Johanna Bischof, Head of Bio-Hub Operations, Euro-BioImaging Hub Team

SCIENTIFIC AMBASSADORS

The Euro-BioImaging Scientific Ambassadors programme aims to raise awareness about the services and opportunities provided by Euro-BioImaging. The first cohort of twelve Scientific Ambassadors was selected in early 2024 in a highly competitive process based on their motivation to help spread the word about Euro-BioImaging and open access to imaging. After thorough training and in close collaboration with the Euro-BioImaging Hub team, our Scientific Ambassadors played a crucial role in expanding the reach of Euro-BioImaging with a number of outreach and awareness raising activities. The activities of the Scientific Ambassador Program are supported by the EVOLVE project.

Scientific Ambassador Programme - Cohort 2024 in numbers

22 outreach activities

10 countries

11 presentations

4 videos

4 articles

3 advocacy activities

Overview of Scientific Ambassador Cohort 2024 activities.

> *I was very happy to advertise such a great platform of collaborative science that is expanding and nurturing an awesome community of bioimaging experts, users and enthusiasts. It was great to be part of it and to take this opportunity to project myself professionally along the way. 2024 was a year of big investment in my professional image and being part of the Euro-BioImaging Ambassador Program has only added to it.*

Scientific Ambassador Taissa Ricciardi-Jorge, PhD, Pirbright Institute

◀ Meet our Scientific Ambassadors & learn more about their activities

JOB SHADOWING

In 2024, Euro-BioImaging developed a Job Shadowing programme for Node Staff with funding support from the EVOLVE project (see page 71). The programme is open to all Euro-BioImaging Node Staff, including technicians, administrative employees, and managers and is an excellent opportunity for Node Staff to work with experts at other Euro-BioImaging Nodes to exchange ideas and best practices on technical, operational and administrative/managerial topics. After concluding their visits, job shadowing fellows continue with a **knowledge dissemination** program in order to spread the knowledge that they have gained and increase the impact of the visit. This involves the creation of training materials and running workshops back at their home Nodes.

Building a European network of expertise and collaboration

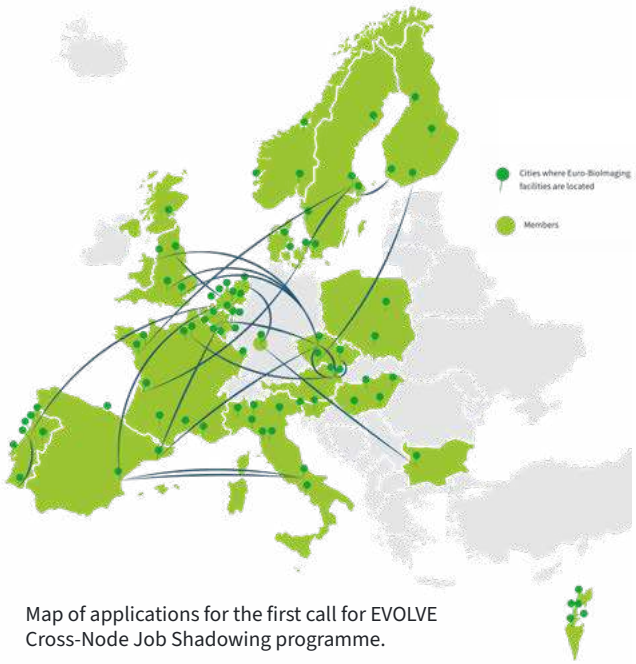
In 2024, we ran the first EVOLVE job shadowing programme with high demand. Below are some statistics about the first call.

24
applications

12
visits accepted

> *Inspiration is really what I brought back home from my [job shadowing] visit. This inspiration might impact how we do things at Leuven, changing our service provision for users and driving us to dare to engineer and experiment more.*

Sebastian Munck, job shadowing participant, from Flanders BioImaging Node to Mesoscopic Imaging Node Barcelona



Map of applications for the first call for EVOLVE Cross-Node Job Shadowing programme.

Knowledge dissemination:

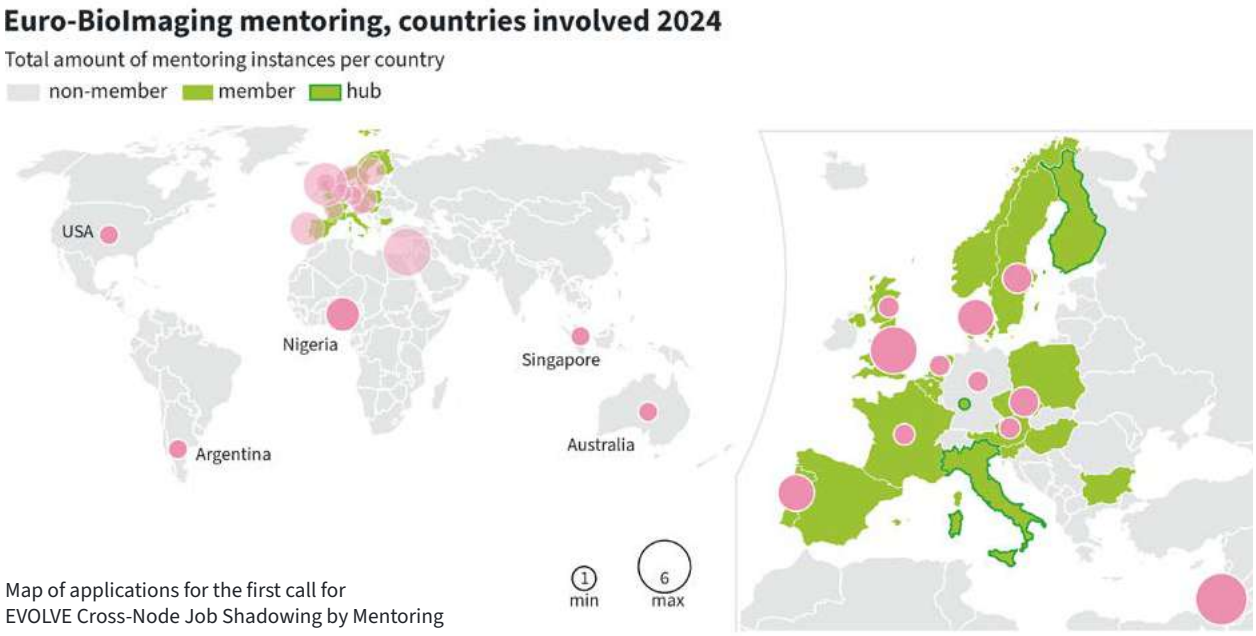
František Kitzberger leading a hands-on MIB workshop at BIOCEV in Prague as post-job shadowing dissemination activity following his visit to the FiAM Node.

Paula Jiménez Gómez presents the EVOLVE Job Shadowing programme and her visit to the DIMP NEUROMED Node to her colleagues at the Radiology and Medical Imaging Node in Valencia.

MENTORING

Building relationships with the European & global imaging community

In 2024, Euro-BioImaging introduced a new training pillar within the framework of EVOLVE - the mentorship programme. Euro-BioImaging's Mentoring Programme strengthens our Node Community by forging relationships with members from other Nodes, with the Global BioImaging network and industry. These mentoring relationships aim to benefit both mentors and mentees and support skill building, career development and daily operations. The first mentoring programme includes 14 mentor/mentee pairs across 15 countries and got underway in early 2025.



Map of applications for the first call for EVOLVE Cross-Node Job Shadowing by Mentoring

Strong focus on career development and peer-to-peer support
Monthly Masterclasses on professional skills for imaging scientists

24
pairs across
15
nations

Participants from the Mentorship Programme onboarding meeting in early 2025.

EUROPEAN STAKEHOLDERS

Euro-BioImaging plays an active role on the European stage, and is heavily invested in direct EU stakeholder engagement, and collaborations on the European level, including via the ERIC Forum, our many EU projects, and other initiatives. In 2024, Euro-BioImaging Hub team members were in Brussels at more than 20 different occasions to interact with research infrastructure partners, contribute to project and community events, and join meetings of the European Innovation Council (EIC) (see Innovation section, p. 38-39).

Visit of Director-General of DG RTD to Euro-BioImaging headquarters

In August 2024, we had the privilege of welcoming Marc Lemaître, Director-General of the Directorate-General for Research and Innovation (DG RTD), to Euro-BioImaging's headquarters in Turku, Finland. A strategic meeting where we discussed Euro-BioImaging's role in bridging European research and innovation and the strategic importance of research infrastructures in strengthening the European Research Area (ERA), supporting the EU missions and contributing to EU competitiveness, preparedness, and resilience.

Marc LeMaitre and members of the Euro-BioImaging Statutory Seat team in Turku, Finland.

ERIC Forum

ERIC Forum is the bottom-up organisation of all currently existing 30 ERICs, which support each other in their implementation as well as operation. Via the Forum ERICs speak with one voice to their major stakeholders at the European level (including the European Commission, ESFRI, Member States) and therefore, the ERIC Forum is one of the leading science policy voices in Europe. Euro-BioImaging Bio-Hub Director, Antje Keppler, currently acts as Chair of the ERIC Forum, a mandate that was renewed in a unanimous election by her peers in 2024. In addition, Euro-BioImaging is involved in the ERIC Forum 2 project, co-chairing Work Package 6.

Antje Keppler in her role as ERIC Forum Chair. Photo by ERIC Forum.

Conference on Research Infrastructures

The Conference on Research Infrastructures, organised by the Belgian Presidency of the Council of the European Union, took place in June 2024 at the Royal Library of Belgium in Brussels. The event aimed to put "Research Infrastructures in a Changing Global, Environmental and Socio-economical Context" by focussing on three main paths of reflection: research infrastructures as crucial players of strategic autonomy in a changing global context, the socioeconomic and environmental impact of research infrastructures and the broad ecosystems of RIs. Director General John Eriksson, and Bio-Hub Section Director and ERIC Forum Chair Antje Keppler represented Euro-BioImaging at the event.

Euro-BioImaging Director General John Eriksson gave a presentation highlighting Euro-BioImaging's journey, from fast member growth to ambitious plans for transnational access services including remote access services.

Research Infrastructures in European Brain Health Research

As part of the Hungarian presidency of the Council of the European Union, a conference focussing on **European cooperation in Brain health research** was organised in December 2024 in Budapest. The meeting aimed to address brain health with a holistic view through cooperation among stakeholders in the European research and innovation ecosystem, highlighting the role of joint European R&I initiatives in promoting brain health. Euro-BioImaging was represented at the event by György Vámosi, from the Hungarian Cellular Imaging Node, as part of a panel on the Role of Research Infrastructures in **European Brain Health research**. The conference produced a set of recommendations for the European Brain Health collaborations.

European Research & Innovation Days

Ilari Pulli and Anne-Charlotte Joubert represented Euro-BioImaging at the the European Commission's flagship research and innovation event in Brussels, the European Research & Innovation Days, where AI4Life, a Euro-BioImaging coordinated Horizon Europe-funded project was selected by the European Commission Directorate-General for Research and Innovation (RTD) to be showcased.

Photo from the European Research & Innovation (R&I) Days.

INTERNATIONAL STAKEHOLDERS

Euro-BioImaging is active on the global stage, interacting with the global imaging community via its involvement in Global BioImaging, an international network of imaging infrastructures and communities, but also thanks to involvement in externally funded projects and bilateral collaborations. Following visits to South Africa and Brazil in 2023, in 2024, Euro-BioImaging Hub team members represented Euro-BioImaging at events in Uruguay, India, China, Japan and Australia.

Meeting the Global BioImaging community

Global BioImaging's Annual Exchange of Experience meeting presents every year the opportunity for the Euro-BioImaging community to meet its international partners. The Exchange of Experience 2024 (EoE2024) was held in Okazaki, Japan, hosted by ABiS, the Japanese imaging infrastructure. Under the topic of **"Image Data Horizons - Global Strategies for Accessible Knowledge"** more than 300 imaging scientists from around the globe got together to exchange on the critical topic of image data. The Euro-BioImaging community was strongly represented, not just with members of the Hub team, but also representatives from 5 Nodes were in attendance, including from the **UK Node, Finnish Advanced Microscopy (FiAM) Node, Flanders BioImaging, Danish BioImaging, and France BioImaging.** This event was followed by the foundingGIDE Community Event, organised by Euro-BioImaging, that brought together stakeholders from the global imaging data community to discuss topics of best practices in image data sharing and exchange (Learn more in the Funded Projects section, p. 72).

Euro-BioImaging Node participants at EoE2024. From left to right: France BioImaging delegation; Stefania Marcotti, UK Node and Junel Solis, FiAM Node, in discussion; and Clara Prats presenting the Danish BioImaging Node.

Building connections with the Chinese Imaging community

In April 2024, the 2nd Sino-French Joint Meeting on BioImaging took place in Beijing, China. France BioImaging co-organised the event and was represented by a large delegation of 12 imaging scientists. Euro-BioImaging was also represented by Antje Keppler, Section Director of the Bio-Hub and Global BioImaging Coordinator. It was a very rich and fruitful scientific and cooperation meeting strengthening international academic exchanges and cooperation with the aim of leveraging the strategic benefits of national scientific and technological infrastructure.

International Conference on Research Infrastructures (ICRI)

The biannual ICRI 2024 meeting took place in Brisbane, Australia. ICRI2024 brought together research infrastructure representatives, national funders and representatives of global indigenous populations. While ICRI is pluridisciplinary, it provided many opportunities to **highlight the importance of imaging** in supporting scientific discovery, as well as the importance of working together across imaging facilities for knowledge sharing and innovation. At the satellite event on **Imaging networks for global impact**, Antje Keppler represented Euro-BioImaging and Global BioImaging. She also co-chaired the satellite event on **"Health Research Infrastructure Ecosystems: Stronger Together"** with the Chair of Euro-BioImaging's Scientific Advisory Board Ian Smith, Emeritus Professor at Monash University, and Merran Smith, Chief Executive of Australia's Population Health Research Network.

Photos above by NIF.

Renewing collaboration with Microscopy Australia

Microscopy Australia is one of Euro-BioImaging's longest-standing international partners. In 2024, the two infrastructures renewed their collaboration agreement, marking 12 years of partnership. The agreement was signed at ICRI in Brisbane, by Antje Keppler and Greg Smith, Board Chair of Microscopy Australia, in the presence of Microscopy Australia CEO Lisa Yen. We look forward to many more years of collaboration and joint activities to advance imaging.

Photo courtesy of Merran Smith.

Re-connecting with the India BioImaging community

Group photo from the India BioImaging community meeting.

India BioImaging has closely collaborated with Euro-BioImaging since its formation in 2012. In December 2024, India BioImaging organised its community meeting at IISER Pune, to re-energise the regional community and shape it for the future. The meeting brought together imaging scientists and facility managers from across India and the diaspora, discussing microscopy training, user access, and solutions for image data storage and analysis. Aastha Mathur, Head of Euro-BioImaging's Image Data Services, joined the meeting with a focus on strengthening collaboration in the Image Data space.

Connecting Infrastructure Hubs across Latin America and Europe

Euro-BioImaging is a supporting partner in the RI-Hubs project, working with **PPBI and Italian Advanced Light Microscopy Nodes**, our Global BioImaging partners at **Latin America BioImaging (LABI)**, and our European RI partners in **Instruct ERIC**. As part of the many training and networking activities in RI-Hubs, Euro-BioImaging, LABI, CEBEM, and Instruct have been organising a webinar series with presenters from both Europe and Latin America sharing cross-continental perspectives and experiences on diverse topics from Facility Management and Image Data Management to Science Diplomacy.

Check out the events from our YouTube series

International Infrastructure collaboration Study Visit to Institut Pasteur Montevideo

As part of an initiative of the EU-CELAC working group on Research Infrastructures, a number of study visits between RIs in European and Latin American & Caribbean countries were supported in 2024. Representatives from Euro-BioImaging and Instruct visited Institut Pasteur Montevideo, Uruguay, connecting with Latin American infrastructures LABI and CEBEM and discussing participation of CELAC countries in European RIs. Euro-BioImaging was represented by Amaranta Amador Bernal, Head of Legal Services and International Relations, and Camilo Guzmán, Scientific Officer for Quality Management of Biological Imaging.

Study visit to Montevideo, Uruguay. Photo CEBEM/LinkedIn.

The Latin American Study visit group. Photo by EMBL/PhotoLab.

Latin American Imaging Scientists visit Global BioImaging

As part of the same study visit program, Global BioImaging at EMBL hosted a group of nine outstanding imaging scientists from different countries across Latin America and the Caribbean for a week of intense workshops on a range of topics, fostering international collaboration.

The Euro-BioImaging Bio-Hub team joined the study visit, connecting with the participants, and contributed to sessions on Image Data management, Communication and Outreach, and facilitating Industry collaboration with partners from the Euro-BioImaging Industry Board

Imaging4All- A new programme to support open access to imaging infrastructure for researchers from Low- and Middle-Income Countries

2024 marked the launch of the new Global BioImaging (GBI) initiative Imaging 4 All (i4A), funded by the Wellcome Trust and coordinated by GBI. This unique funding opportunity aims to provide equitable access to imaging technologies for researchers from low- and middle-income countries (LMIC), enabling them to visit and benefit from state-of-the-art imaging facilities and expertise worldwide. By supporting image data acquisition, knowledge exchange, skill development, and international collaboration, i4A addresses the critical disparities in imaging access that impede scientific progress in under-resourced regions.

GLOBAL BIOIMAGING
growing collaboration

IMAGING 4 ALL
ADVANCING IMAGING SCIENCE GLOBALLY

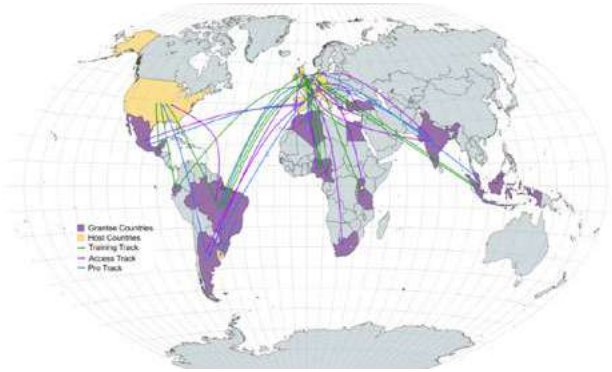
Access Track — **36** applications received

Pro Track — **22** applications received

Training Track — **25** applications received

i4A provides support for access to imaging facilities (Access Track), hands-on training in imaging facility management (Pro Track), and training workshops (Training Track). As a Global BioImaging partner and quality-controlled infrastructure, Euro-BioImaging Node facilities are exclusively eligible to host Pro Track applications within Europe.

The first i4A Call, held in Autumn 2024, was a resounding success, with a total of 83 received applications from all regions of the world. After a competitive review and selection process, 40 grants were awarded for researchers from 18 different countries. Across all tracks, Euro-BioImaging Nodes were the most selected hosting institutions and training providers. 85% of host institutions for the awarded grantees are located in Europe.



23 **grantees will visit Euro-BioImaging Nodes for projects or training**

38 **applications to Euro-BioImaging Nodes were received**

Movement of i4A grantees around the world to access instrumentation and training.

i4A supported visits are taking place in 2025 and Euro-BioImaging and its Nodes look forward to supporting the grantees. Two more i4A Open Calls will be run in 2025. https://globalbioimaging.org/i4a

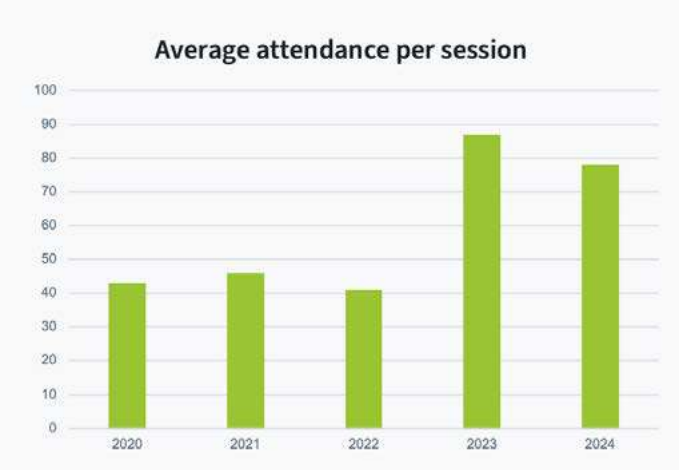
VIRTUAL PUB

The Euro-BioImaging Virtual Pub is a free, weekly, online lecture series, open to the entire imaging community. Topics include new biological and biomedical imaging technologies, image data management and analysis and more. Born in response to the COVID-19 lockdown in March 2020, the Virtual Pub today is one of the single most important initiatives to raise awareness of the Euro-BioImaging research infrastructure. Not only does the Virtual Pub draw a diverse audience every week, it also provides a platform for strategic partnerships with different communities and initiatives, including the Tech Exchange with the Euro-BioImaging Industry Board, allowing us to widen the circle of awareness of Euro-BioImaging ERIC with imaging enthusiasts. Overall, we have leveraged the Virtual Pub to raise awareness about Euro-BIoImaging with prominent members of the community and to drive engagement with new imaging communities.

The Virtual Pub

174

Virtual Pub events since 2020



Who's in our audience each week?

- Node staff
- Students
- PIs and other researchers
- International biological & biomedical imaging community members
- Euro-BioImaging Hub staff, Board members and Scientific Advisory Board members
- Industry partners

10,100

cumulative attendees since 2020

Speakers from

27

countries

Our partner communities

Correlated Multimodal Imaging in Life Sciences
comulis
globe

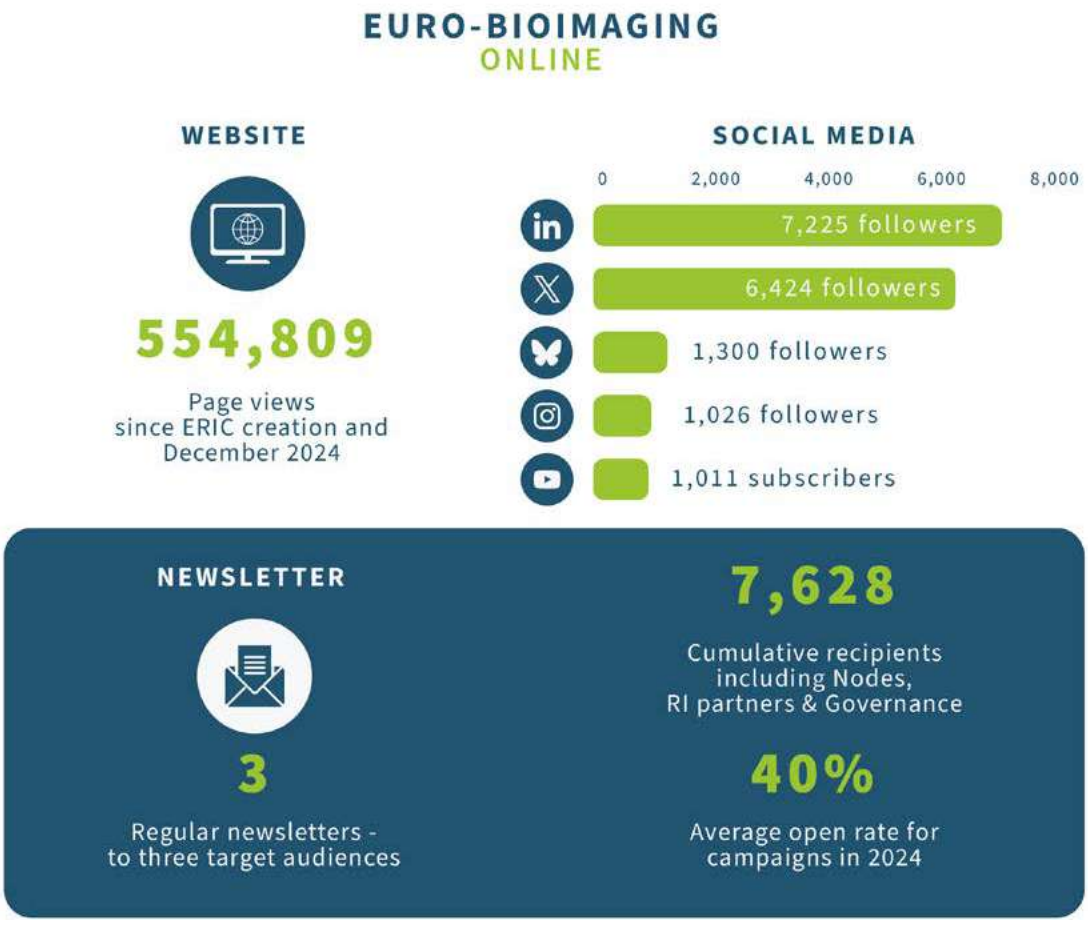
ISCaM
International Society for Cancer Metabolism

DIGITAL COMMUNICATIONS

In June 2024, we released our new website. It is designed as a community resource to advertise not only user access at Euro-BioImaging Nodes but also events, opportunities (funding, jobs, resources) and news. Its sleek, responsive design and clear menu organisation provide maximum visibility for Euro-BioImaging activities.

We use multiple social media channels and three regular newsletters to give visibility to imaging scientists, our Nodes, researchers, and advertise opportunities. Our newsletter audience continued to grow in 2024, and we also saw an increase in the opening rate of our newsletters, from 36% in 2023 to 40% in 2024. This is due to better subject lines and more opportunities to share through the EVOLVE project.

In response to changes at Twitter (X), previously our most important social media channel, we diversified our presence on social media in late 2023 and early 2024. We created a BlueSky account, started posting actively to Instagram, and continued to grow our YouTube channel. In 2024, LinkedIn became our most important social media channel, with more followers than on X by the end of the year. In 2025, we will rely less on social media to advertise our opportunities and will streamline and improve our direct mailing capacity in order to reach our community in the safe space of their inbox.



Data from December 2024.

FUNDED PROJECTS

OVERVIEW

In 2024, Euro-BioImaging ERIC continued to lead and contribute to a wide range of EU-funded projects. In the next pages, discover some of the projects Euro-BioImaging is involved in and how they benefit our stakeholders and community. In 2024, two new projects led by Euro-BioImaging kicked off: EVOLVE to develop our infrastructure, and foundingGIDE to develop common recommendations for ontologies and metadata together with the wider global bioimage data community. These two projects set the tone for 2024, allowing us to bring new team members onboard and offer new opportunities to our community. Both of these projects are highlighted in this section.

At the same time, Euro-BioImaging continued to coordinate access to a portfolio of cutting-edge imaging technologies for researchers in different domains through three INFRA-SERV projects, highlighted here and in the Excellent Science section. The Euro-BioImaging coordinated project AI4Life continued to create waves. It was selected as a Success Story by the European Commission (EC) Directorate-General for Research and Innovation (DG RTD) and featured on their website.

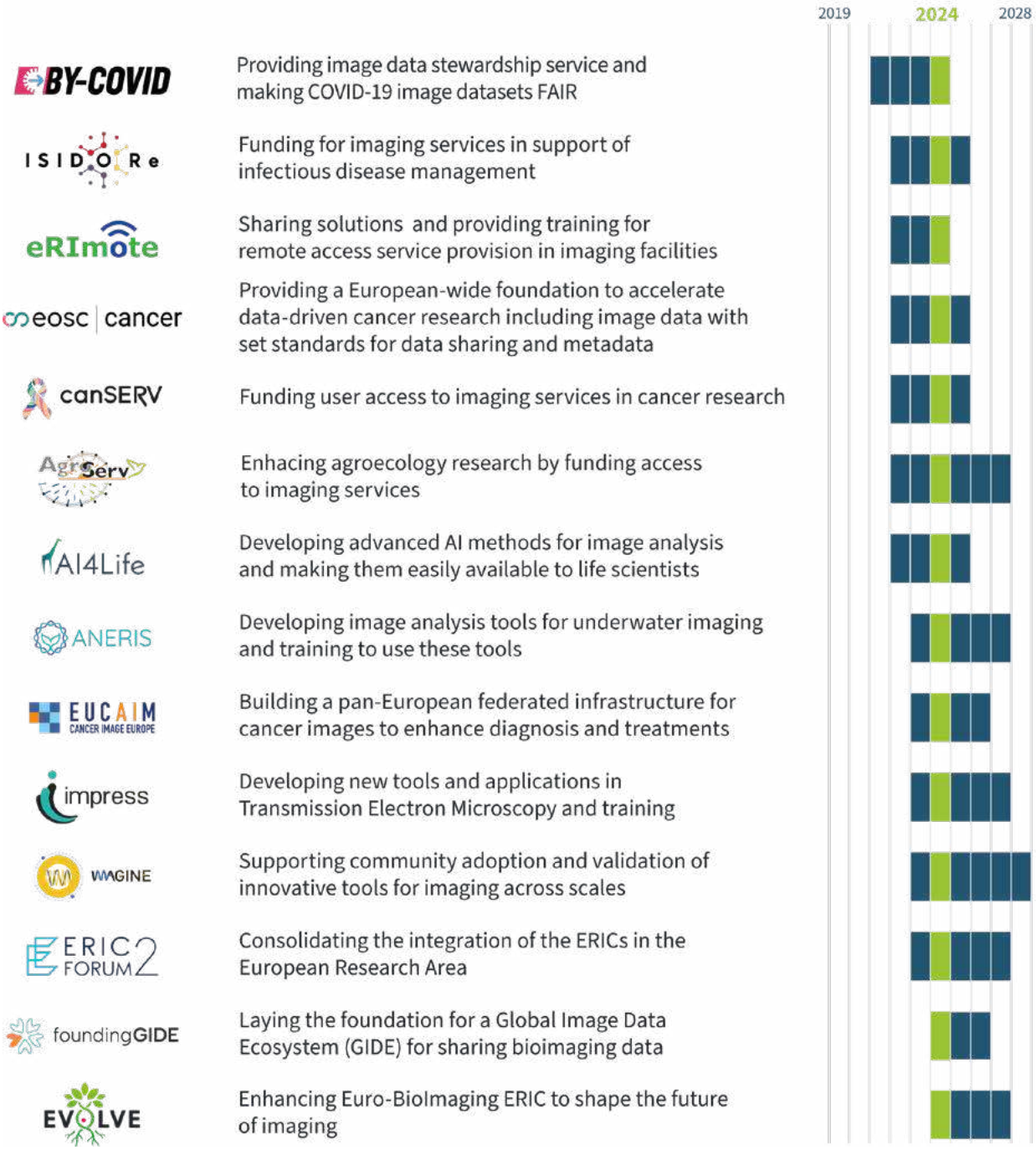
Together with our Nodes, we are also actively participating in an IHI (International Health Initiative) funded project that started this year - ILLUMINATE (see Innovation section, p. 35).

In 2024, several of the projects we were involved in also ended. For example, the BY-COVID project (see more about project outcomes in the Data Services section, p. 49.) And finally, the eRImote project, whose outcomes for our community are highlighted in this section.

In 2024, we also celebrated the granting of four new projects which will kick off in 2025 – RI SCALE, Re-Imagine Crops, PRIM-TECH3R, OSCARS FIESTA, which complement our growing and constantly evolving project landscape.

PROJECT TIMELINE

Funded by
the European Union



USER ACCESS PROJECTS

Euro-BioImaging and its Nodes contribute to 3 EU-funded INFRA-SERV projects, representing a total of 1.4 Million Euros to support user projects at Euro-BioImaging Nodes between 2022-2027. The impact of these projects is tangible: Funding schemes allow researchers to benefit from technologies, expertise and services that are not available at their home institute, with significant impact on scientific results.

> *ISIDORe has really opened the door for us to integrate several scientific services and expertise across Europe, and has been a facilitator for the overall project implementation. Thanks to ISIDORe and Euro-BioImaging, we could have free access to state-of-the-art imaging expertise and technologies offered at EMBL.*
>
> Susana Guerra
> MPOX researcher, Professor of Microbiology,
> Autonomous University of Madrid Medical School

ISIDORe

Designed to effectively support research on infectious diseases and increase pandemic preparedness, the ISIDORe project kicked off in February 2022. Eighteen Euro-BioImaging Nodes participate in the project, offering state-of-the-art imaging expertise to enhance basic research, drug discovery, diagnostics, vaccines, and clinical disease management. Euro-BioImaging Nodes supported 22 user projects covering a diverse range of pathogens, and are actively contributing to the development of new services through the Joint Research Activity (JRA) funding. See the Excellent Science section (p. 27) and our website User Stories section to learn the outcomes of the funded user projects.

22
user projects funded

€395 k
allocated to Euro-BioImaging Nodes for TNA projects

11
nodes received TNA or JRA funding

€516 k
allocated to Euro-BioImaging Nodes for JRA projects

AgroServ

AgroServ is a transdisciplinary project (2022-2027) that supports the agroecology research community by funding interdisciplinary agroecology research projects. Within the project, Euro-BioImaging coordinates and provides open access to a portfolio of cutting-edge Biological and Biomedical imaging services through nine Euro-BioImaging Nodes. All successful user projects must combine services from at least two participating research infrastructures.

Euro-BioImaging services are highly complementary to the services of other AgroServ project partners and our imaging services are the fourth most requested, following those of EMPHASIS, AnaEE-ERIC and METROFOOD. We look forward to exploring the results of these first selected projects in 2025.

11

user projects funded

€180 k

allocated to Euro-BioImaging Nodes for TNA projects

+4

additional Open Calls in 2025 and 2026

canSERV

canSERV is designed to support cancer research by providing cutting edge, interdisciplinary and customised oncology services across the entire cancer continuum via a consortium of European Research Infrastructures. Within the project, Euro-BioImaging coordinates access to a large portfolio of cutting-edge biological and biomedical imaging services through 36 Euro-BioImaging Nodes.

28

user projects funded

€490 k

allotted to Euro-BioImaging Nodes for TNA projects

+1

additional Open Calls in 2025

EVOLVE

The EVOLVE Project – Euro-BioImaging - Vision - Open Science - Landscape - Visibility – Excellence – enables Euro-BioImaging to reach the next level as a unique pan-European research infrastructure and to respond to the full range of needs and demands of its growing communities of users, Nodes, ERIC members, and other stakeholders. All outcomes of the EVOLVE project aim to enhance the capabilities of Euro-BioImaging to support excellent European science and the key priorities of the EU.

Thanks to EVOLVE Euro-BioImaging is strengthening its operations and capacities for strategic partnering, optimising governance and administration processes, and boosting outreach activities in key strategic areas. EVOLVE allows Euro-BioImaging to launch various initiatives to support the community and work with our stakeholders. At the centre of the EVOLVE activities are the Euro-BioImaging Nodes and the majority of the project's outcomes is designed to benefit them. EVOLVE opportunities empower Euro-BioImaging Node staff to exchange knowledge, strengthen their networks, and advance their careers by providing access to training resources. The first EVOLVE Job Shadowing Programme (see p. 56) was highly oversubscribed and became one of the project's key successes in 2024. Work accomplished in the first year of EVOLVE enables us to launch future training initiatives for the Nodes as well as for the Euro-BioImaging Hub staff to increase their competence and capacities to benefit the community.

Other EVOLVE activities that support the work with Euro-BioImaging stakeholders include organizing events for political stakeholders and industry partners, scientific events for the general public, broader attendance at scientific conferences that target new user groups, Scientific Ambassadors Programme, EVOLVE Mentoring Programme, EVOLVE thematic webinars and workshops and much more. Other branches of EVOLVE focus on the development of the next generation of Euro-BioImaging user access web portal, enhancing Euro-BioImaging FAIR image data services and supporting image data communities across Europe and beyond, and in collaboration with the Nodes, establishing a roadmap to implement green and digital transition objectives and strengthening remote access to Euro-BioImaging services.

In 2024, exercises such as mapping of Euro-BioImaging stakeholders and landscape analysis of training resources of the Nodes have been conducted and laid the foundation for valuable tools to be implemented in 2025. Taken together, the EVOLVE project has started off strong and has already greatly contributed to the ongoing enhancement of Euro-BioImaging's capacity to support excellent European science.

The EVOLVE project was kicked off together with the Euro-BioImaging Node family at the All-Hands Nodes Meeting in Turin, in April 2024.

foundingGIDE

foundingGIDE (founding a Global Image Data Ecosystem) project coordinated by Euro-BioImaging ERIC kicked-off in March 2024. The consortium brings together imaging infrastructures from Europe, Australia and Japan, including data repositories, like the BioImage Archive and IDR from Europe, SSBD from Japan and AIS from Australia, to align technical developments and community efforts towards image data sharing across the globe. The project has already reached several key milestones in 2024, working towards its aim to enhance biological and preclinical image data and metadata sharing.

A major milestone of 2024 was the Community Event, held in October 2024 in Okazaki, Japan. More than 100 participants from the global imaging community, including researchers, policymakers, funders, and industry leaders, came together for 1.5 days to exchange ideas and explore strategies towards building an interoperable Global Image Data Ecosystem.

Complementing the community event, the Technical Event, followed in November 2024, in Kobe, Japan. This event featured two interactive workshops and a hackathon, engaging developers and data experts in hands-on work to improve standardisation of metadata models and ontology mappings.

With a strong start in 2024, foundingGIDE continues to position Euro-BioImaging and its partners at the forefront of global efforts to unlock the potential of imaging data.

Participants from

26

countries

100

in-person participants

> *Discussions emphasised the need for sustainable funding models, harmonised global policies, and strong industry partnerships to ensure robust, long-term FAIR data infrastructures. Participants underscored the importance of global collaboration and inclusive engagement, particularly from under-resourced regions, as essential for addressing technical and cultural barriers and driving equitable progress in the field.*

Aastha Mathur, Head of Image Data Services at Euro-BioImaging and Scientific coordinator of foundingGIDE project

Check out
the project website

eRImote

eRImote - improving Research Infrastructure resilience through remote access

The eRImote project was a 2.5 year project between 2022 and 2024. The small consortium of beneficiaries from all research domains came together under the coordination of DESY (German Synchrotron) to map the landscape of remote access service provision across Infrastructures, collect helpful material, provide a platform for exchange, and deliver recommendations for provision of RI services by remote and virtual access.

Euro-BioImaging was one of three participating Infrastructures from the Life Sciences, and together with partner RI CESSDA (Social Sciences) co-led WP3 in eRImote, which was the central data collection and community interface work package. As part of our participation in the eRImote project, Euro-BioImaging achieved the following:

Organised four broad workshops for information gathering

Bringing together more than 250 participants from different domains.

Organised two expert groups

Groups focussed on remote training and remote instrument control - connecting experts and providing a platform for exchange.

Analysis of information and use cases

As a result of the workshops and expert groups, more than 60 documents and videos were collected for the eRImote information platform, making community-specific knowledge broadly available. Based on analysis of the gathered information, key remaining challenges were identified around **Logistics and regulations** and **Cybersecurity and technical requirements**.

Central contributions to the Green Paper

The eRImote Green paper provides a number of recommendations to facilitate the provision of remote and virtual access.

Use case on hybrid training

Across three Euro-BioImaging Nodes - **PPBI Portugal, France BioImaging, and NMI Sweden** - we organised a distributed hybrid training course for Image analysis, testing new training modalities, connecting Nodes, and providing hands-on training to researchers and facility staff.

Series of training workshops for EM community

Together with three members of the Euro-BioImaging Industry Board - Zeiss, ThermoFisher, and JEOL - we organised a series of virtual training workshops dedicated to advanced training on remote access to EM instruments for EM facility staff at Euro-BioImaging Nodes.

eRImote kick-off meeting in June 2022 at DESY, Hamburg, Germany.

Final meeting of the eRImote project in Brussels, October 2024.

FINANCIAL INFORMATION

BUDGET TABLES

Euro-BioImaging ERIC is funded by the annual membership contributions from the ERIC members in accordance with the Euro-BioImaging ERIC Statutes. External funding sources are comprised of Horizon Europe projects. Euro-BioImaging ERIC's accounts are audited annually according to Finnish law.

Table 1. Income Statement for the financial year January 1 - December 31, 2024

Income Statement	2024		2023
Income, basic operation budget	**Budget**	**Actual**	**Actual**
Membership Contributions	€1,720,080	€1,961,585	€1,584,043
Other			€83,156
Expenses, basic operation budget			
Personnel Cost	-€1,219,359	-€1,259,332	-€1,282,474
Meetings	-€42,629	-€36,227	-€108,270
Equipment and software	-€44,435	-€85,815	€0
Travel	-€128,444	-€188,927	-€119,689
Other	-€285,213	-€221,024	-€58,641
User Access Reimbursements		-€19,452	-€37,037
Services, consultation, outsourcing			-€182,566
Euro-BioImaging Web Portal			-€93,837
Total Expenses	**-€1,720,080**	**-€1,810,777**	**-€1,882,514**
Result, basic operation budget	**€0**	**€150,808**	**-€215,315**
Net project co-fund effect on the basic operation budget		**-€110,060**	
Overall result		**€40,747**	

In-kind membership contributions received in 2024 amounted to 0.5 FTE, remaining unchanged from 2023.

Table 2. Reserve Funds

Reserve funds	31.12.2024	31.12.2023
Reserve at beginning of period	€1,907,270	€2,122,586
Result for the period	€40,747	-€215,315
Total Reserve at period end	**€1,948,017**	**€1,907,270**

Table 3. External funding sources

Total Project Cost Booked	Recognized project contribution
€1,957,201	€1,847,141

External in-kind contributions received in 2024 amounted to 0.2 FTE

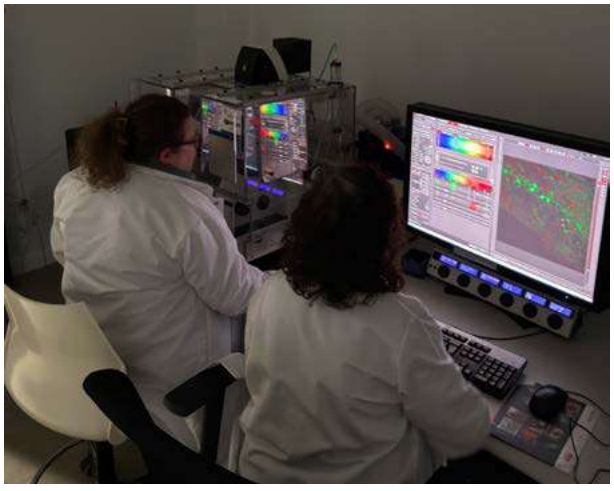
NODES

MEET THE NODES

In 2024 our family of Nodes grew to 41 with Flanders BioImaging in Belgium and five Nodes across Spain, based in Bilbao, Valencia and Barcelona, joining the ranks. Four other Nodes also underwent Upgrades, adding new facilities into their multi-sited Node structure. Learn more about our Nodes - both established and new - in this section.

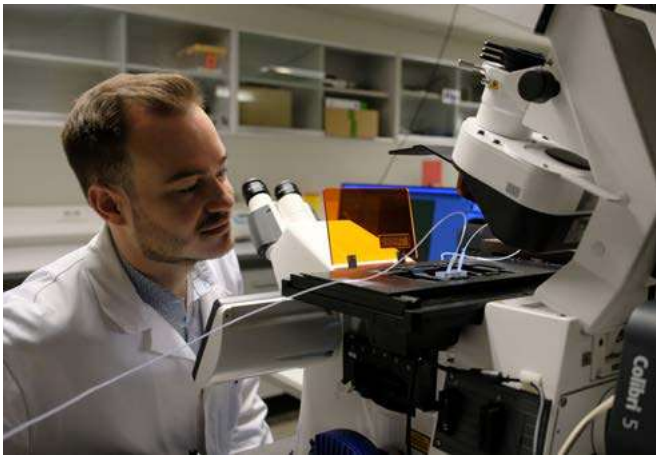
Our Nodes support user projects, are active in European-funded research projects, support and develop technological breakthroughs, organise outstanding training courses and conferences, and make science accessible to the public through their outreach efforts. They also engage in teaching on the Master's and PhD levels. In the next pages, get a glimpse into daily life at some of our Nodes.

A specialist operating in a cleanroom environment dedicated to radiopharmaceutical production at the Medical & Preclinical Imaging Hungary Node. The facility plays a crucial role in the manufacturing of radiopharmaceuticals, supporting both advanced medical research and patient care. Photo courtesy of University of Debrecen.



Researchers at the Bilbao Node performing time lapse confocal fluorescence imaging.

A researcher performing ultrasound imaging of chicken embryo at the MMMI Italian Node.



Flanders BioImaging offers a cross-node interuniversity microscopy course, iCALM, to introduce PhD students and/or (early-career) post-docs to fluorescence microscopy. Photo by University of Leuven.

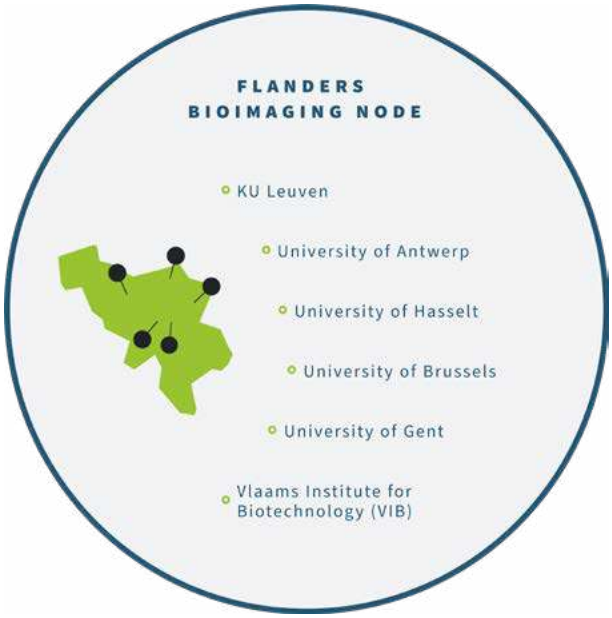
THE GROWING NODE COMMUNITY

Flanders BioImaging

The Flanders BioImaging Node became active in 2024, bringing together nine excellent facilities, hosted at six institutions across the country. The Node offers imaging services across multiple scales and domains, combining biological and biomedical imaging techniques - from the molecular scale, via small and large animal models to human biomedical imaging.

5 Nodes across Spain

With Spain joining Euro-BioImaging in late 2023, five new Nodes came on board in 2024. The Spanish Node community is made up of four biological imaging Nodes, one in Bilbao and three in Barcelona, and one biomedical imaging Node, in Valencia. Together they offer a wide range of light microscopy services, from nanoscopy and mesoscopic imaging to image analysis and functional imaging. The medical Node provides population imaging services.



> *In our inaugural year as a Euro-BioImaging node, balancing intense coordination, limited resources, and high ambitions has been challenging—yet our excitement and commitment to driving imaging science forward has never been stronger.*
>
> Artur Escalada, Bilbao Node representative

Node Upgrades across France, Sweden, and the Czech Republic

Four Euro-BioImaging Nodes applied for Node upgrades in January 2024. With these upgrades, we are delighted to welcome 20 new facilities to the Euro-BioImaging family. **France BioImaging** welcomed two new national sub-Nodes - in Alsace and Toulouse - into its structure, combining 15 facilities with a wide range of technologies. **The Swedish NMI Node** brought on board new facilities at the Karolinska Institute and the Lund University Bioimaging Centre. With the addition of significant preclinical and clinical imaging capabilities in Lund, NMI Sweden is now a Mixed Node offering both biological and biomedical imaging technologies. The **Prague Node** welcomed the Microscopy Service Centre of the Institute of Experimental Medicine (IEM CAS), specialising in intravital imaging in small animals. The **Brno Node** brought in two facilities one focussed on Electron microscopy and Raman spectroscopy, and the Centre for Biomedical Image Analysis.

TRAINING

Training courses organised by our Nodes represent key areas of the current imaging training landscape, notably the strong emphasis on hands-on technical training and its capacity to address emerging scientific needs. Existing offerings provide coverage of core imaging technologies and data analysis, ensuring that both users and core facility staff have access to a wide range of learning opportunities.

Euro-BioImaging partners with MicroscopyDB, a community-driven repository to display the Nodes training offer from all biological and biomedical imaging technologies in the Euro-BioImaging website and across their ever growing global partner networks.

380

training courses were organised by Euro-BioImaging Nodes in 2024

M2H (Molecules 2 Humans) Boot camp, an intensive training course for 24 scientists from around the globe was organised by the Danish BioImaging Node in collaboration with Global BioImaging. The focus was how to design and implement multimodal imaging workflows, spanning scales from molecules to entire organisms.

Images courtesy of Danish BioImaging.

Photo by Anna Mirgos.

In late July and early August 2024, the Advanced Microscopy Node Poland hosted a microscopy workshop devoted to Lattice Light Sheet, automated confocal (CD7) and spinning disk systems in collaboration with Zeiss.

Every year, France-BioImaging organises an Advanced Training course (FBI-AT). This year the theme was “Light-Sheet Microscopy: Principle and Applications to Neuroscience and 3D Cell Culture” and the course took place in Bordeaux. Photo courtesy of France-BioImaging.

France BioImaging, Swedish NMI, and PPBI Nodes contributed to a distributed in-person training course supported by eRImote, called “Intro to BioImage Analysis with Python for Life Scientists.” This course took place locally at these three Euro-Bioimaging Nodes -with joint sessions online that connected all sites. Photo courtesy of GIMM, PPBI.

CCI, University of Gothenburg, part of Swedish NMI, organised the first GLOBIAS Workshop with CZI funding. More than 50 image analysts from Asia, Africa, North America, South America, Europe and Australia attended this event.

OUR NODES IN 2024

It was nice to see growing interest in accessing our facility through the competitive National Access scheme.

Jędrzej Szymański, Polish Advanced Light Microscopy Node

In 2024, we improved the nuclear medicine laboratory and improved small animal imaging procedures. It's the start of a new era for our Node with lots of new instrumentation.

Enzo Terreno, MMMI Italian Node

A researcher positiong subject for Magnetic Resonance imaging at the MMMI Italian Node.

The Radiology and Medical Imaging Valencia Node organises JAIMA 2024, a conference about medical imaging which takes place every year.

After the acceptance of the Netherlands roadmap infrastructure proposal this year, we have tested and compared various equipment resulting in major microscope investments in late 2024 and early 2025 in all LCAM labs.

Mark Hink, LCAM Node

Staff at the Barcelona Live and Intravital Node with the new Bruker Multiphoton for *in vivo* imaging.

2024 has been a year of transition for us as a Euro-BioImaging Node, a chance to explore funding and visibility opportunities and feel part of this great community. It has also helped us coordinate at a national level, making this first year a valuable learning experience.

Maria Calvo, Barcelona Live and Intravital Node (BLivIN)

AUSTRIA

Austrian BioImaging/CMI

Node contact: Baubak Bajoghli
Website: www.austrian-bioimaging.at

FACILITIES
22

EXTERNAL USERS
>140

USER PUBLICATIONS
N/A

REMOTE USERS
<10

TRAINING COURSES ORGANIZED
0

STAFF INVOLVED
>40

- Austria BioImaging became a legal entity as an association in 2024.
- New instrument: Lattice Lightsheet 7.
- The Node hosted a Euro-BioImaging Scientific Ambassador and published a brochure based on the material the Ambassador created.
- Three AgroSERV-funded user projects were awarded to the PhenoPlant facility.

BELGIUM

Flanders Bioimaging

Node contact: Sebastian Munck
Website: www.flandersbioimaging.org

FACILITIES
9

EXTERNAL USERS
178

USER PUBLICATIONS
79

REMOTE USERS
11

TRAINING COURSES ORGANIZED
12

STAFF INVOLVED
25

- The Node won more than 14 grants, including funding for projects and infrastructure and 1 Mio CPU hours from the Flemish Supercomputer.
- 17 instrument upgrades were implemented: ranging from basic to high end microscopes and to scintillating detectors; notably 2 x LSM 980 and 2 x Light sheet.
- Two Node staff members participated in Euro-BioImaging Job Shadowing visits to Nodes in Prague and Barcelona.
- The Node organized a Hackathon: Towards Composable Modules for Standardized Analysis Pipelines in Nextflow.

BULGARIA

Sofia BioImaging Node

Node contact: Stoyno Stoynov
Website: www.dnarepair.bas.bg/eurobioimaging.bg/site/

FACILITIES
1

EXTERNAL USERS
5

USER PUBLICATIONS
8

REMOTE USERS
0

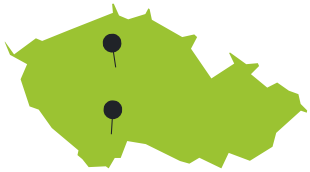
TRAINING COURSES ORGANIZED
1

STAFF INVOLVED
7

- The Node developed a methodology for measuring the kinetics of replication fork stalling and restart in live cells.
- The Node contributed to a stand-out publication of a microscopy-based comprehensive comparative analysis of the capacity of different PARP inhibitors to catalitically inhibit their target as well as their ability to 'trap' it on DNA - https://doi.org/10.1016/j.celrep.2024.114234.
- The Node contributed to further developemnt of a methodology for measuring the kinetics of virus-like particle (VLP) entry into cells in 3D with ability to simultaneously measure changes in VLP speed and pH.
- The Node generated and made publicly available the COVIDynamics database with videos showing the tracked VLPs.

CZECHIA

Advanced Light and Electron Microscopy Node Prague



Node contact: Aleš Benda
Website: www.czech-bioimaging.cz/cooperation/euro-bioimaging/prague-node-eubi

FACILITIES
7

EXTERNAL USERS
372

USER PUBLICATIONS
131

REMOTE USERS
94

TRAINING COURSES ORGANIZED
21

STAFF INVOLVED
33.25

- New instruments include: TESCAN Cryo-FIB-SEM, Zeiss Lattice Lightsheet 7, Abberior INFINITY, Akoya PhenoCycler-Fusion 2.0, Evident IXplore SpinSR, GAIA re-scanning confocal microscope.
- IPHYS BIF became partner in Horizon Europe PRIM-TECH3R project for imaging muscle samples using label-free methods.
- Node staff contributed to image analysis software development - from IEM MSC with focus on multi-modal data integration and from BC LEM on implementation of AI tools in MIB software in collaboration with FiAM Node.
- The Node Launched the µLectures - a new monthly seminar series organized by IEM MSC designed to enhance researchers' understanding of microscopy's fundamental workings and principles.

CZECHIA

Advanced Multimodal Imaging Node Brno

Node contact: Michal Mikl
Website: www.eurobioimaging-access.eu/nodes/advanced-light-microscopy-and-medical-imaging-node-brno-cz

FACILITIES 6

EXTERNAL USERS 64

USER PUBLICATIONS 61

REMOTE USERS 7

TRAINING COURSES ORGANIZED 13

STAFF INVOLVED 25.3

- Two new facilities joining the Node - one for electron microscopy, and one for data analysis.
- The Node is involved in many teaching activities, including a newly established Master's program in Microscopy, Q-Phase holographic microscope workshops and the first Advanced Course on Preclinical Imaging.
- Technology innovation - new motion-robust retrospectively gated radial-golden-angle ASL acquisition and postprocessing method applicable to in vivo cardiac applications, and redesign of the PerfLab software to calculate perfusion maps from DCE-MRI data.
- New instruments: Leica Stellaris 8 Falcon with FLIM module and a new RF coil for detection of deuterium-labeled compounds to study metabolic pathways.
- The Biophotonics core facility moved to a new location.

CZECHIA

Center for Advanced Preclinical Imaging

Node contact: Ludek Sefc
Website: capi.lf1.cuni.cz/en

FACILITIES 1

EXTERNAL USERS 53

USER PUBLICATIONS 13

REMOTE USERS 0

TRAINING COURSES ORGANIZED 2

STAFF INVOLVED 12

- The Node was involved as national proposer and WG4 (Biomedical applications) leader in the COST action CA23132 - MPI for next-generation theranostics and medical research (NexMPI).
- The Node participated in two grants on "Polymer-based supramolecular radiosensitizers for anticancer radiotherapy" (from Ministry of Health of the Czech Republic), and "Targeting Tumor Bioenergetics for Therapeutic Intervention in Cancer" (bilateral Czech - German grant GF22-16819K with TU Dresden) respectively.
- The Node worked on a prototype of a SWIR optical tomography system.

DENMARK

Danish BioImaging Infrastructure

Node contact: Clara Prats, Sonia Garcia
Website: www.dbi-infra.eu

FACILITIES
6

EXTERNAL USERS
619

USER PUBLICATIONS
>164

REMOTE USERS
>20

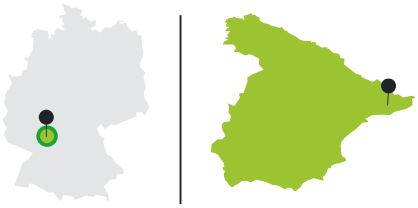
TRAINING COURSES ORGANIZED
16

STAFF INVOLVED
26

- The preclinical facility at the Aarhus University Hospital has finalized the construction of an optical imaging lab, a microCT lab and an ultrasonography imaging lab with new instrumentation. Other facilities also received new instruments, including for analytical and label-free imaging, lightsheet and Electron Microscopy systems.
- Julia Katharina Mertesdorf was awarded EVOLVE job shadowing to visit BIIF, Upsala University, NMI Node.
- DBI organised and hosted the Molecule to Human (M2H) bootcamp, a unique event that bridged clinical and preclinical with microscopy imaging communities with 24 applicants from across the globe. This project gave DBI-INFRA visibility at the international level, and the competitive selection of DBI-INFRA by Global BioImaging as the M2H host is a quality stamp to the infrastructures. The boot camp was a success, receiving much praise and fantastic feedback from all stakeholders.

EMBL

Euro-BioImaging EMBL Node



Node contact: Virginia Pierini, Stefan Terjung, Rachel Mellwig, Jim Swoger
Website: www.eurobioimaging-access.eu/nodes/advanced-light-microscopy-facility-embl

FACILITIES
4

EXTERNAL USERS
150

USER PUBLICATIONS
77

REMOTE USERS
62

TRAINING COURSES ORGANIZED
12

STAFF INVOLVED
16

- EMBL Imaging Centre received two new CZI grants for multidisciplinary technology development - integration of 3D X-ray imaging of tissues with spatial transcriptomics and cryo-electron microscopy techniques for multiscale imaging.
- Standout publication: Using cryo-electron tomography to provide high-resolution insights into the molecular architecture and dynamic processes within Ebola virus replication DOI: 10.1016/j.cell.2024.11.024.
- EMBL celebrated 50 years of imaging developments in 2024.

EMBL 50 year anniversary.
Photo courtesy of EMBL/PhotoLab.

FINLAND

Finnish Advanced Microscopy Node

Node contact: Irina Belaia
Website: www.eurobioimaging.fi/FiAM

FACILITIES
8

EXTERNAL USERS
73

USER PUBLICATIONS
196

REMOTE USERS
45

TRAINING COURSES ORGANIZED
28

STAFF INVOLVED
26

- The Node won several grants, including European Regional Development funds, Innovative Finland grant on vascular health, and “Saariston kuva” project developing image analysis tools for environmental and climate sustainability.
- The Node was active in outreach to the public and students through DemoDay in Turku and The Researcher’s Night in Helsinki.
- The Node contributed to two articles about the importance of bioimage analysts and imaging scientists (Cimini BA, et al. J Cell Sci. 2024;137(20):jcs262322; Wright GD, et al. J Microsc. 2024 Jun;294(3):397-410).
- Co-organised the special event “From imaging Nobel to AI future” celebrated the 10th annniversary of Stefan Hell’s Nobel Prize award for super-resolution microscopy.

FINLAND

Finnish Biomedical Imaging Node

Node contact: Tiina Saanijoki
Website: https://eurobioimaging.fi/FiBI/

FACILITIES
5

EXTERNAL USERS
190

USER PUBLICATIONS
266

REMOTE USERS
6

TRAINING COURSES ORGANIZED
20

STAFF INVOLVED
95

- The Node received two NIH -R01 grants for development of new zero-echo time fMRI.
- The Node led several training intiatives including the annual “In Vivo Imaging: Methods and Applications” minisymposium, 3 graduate programs, and participation in the biennial TRANSMED Mater’s program course “Imaging in Science and Medicine” coordinated by the BIU-IVI.
- An optical in vivo bioluminescence & fluorescence imaging experiment funded by the ISIDORe project was performed at the BIU-IVI (see p. 27).
- The Node participated in the ThingLink Spaces Project, a pilot of a completely new type of interactive learning experience with a trial during which the small animal hospital’s X-ray and ultrasound equipment were converted into an interactive format viewable through Apple Vision Pro.

FRANCE

France-BioImaging Node

Node contact: Caroline Thiriet
Website: www.france-bioimaging.org

FACILITIES
27

EXTERNAL USERS
763

USER PUBLICATIONS
248

REMOTE USERS
9

TRAINING COURSES ORGANIZED
87

STAFF INVOLVED
276

- FBI won 9.2 M Euro national funding to keep their research and technologies at the highest level of excellence.
- Successfully ran the first edition of the “Light My Cells” Challenge - a data machine learning competition.
- 2 new national Nodes joined the national infrastructure- Rhône-Alpes and Normandie Node.
- New team members include: René-Marc Mège as Scientific Director and Samy Al-Bourgol as FBI business developer.

HUNGARY

Cellular Imaging Hungary

Node contact: János Szöllősi
Website: www.eurobioimaging.eu/nodes/cellular-imaging-hungary

FACILITIES
5

EXTERNAL USERS
50

USER PUBLICATIONS
~100

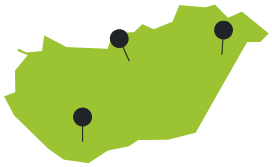
REMOTE USERS
9

TRAINING COURSES ORGANIZED
6

STAFF INVOLVED
20

- New instruments: JEOL 1400-Flash TEM and STEDYCON superresolution microscope at Univ. of Debrecen, Leica Stellaris 8 FALCON at HUN-REN BRC, Szeged.
- An ISIDORe project and a CanSERV project are awarded to the Node to study the targeted delivery of photodynamic agents to SARS-COV-2 infected and cancer cells using nanoparticles.
- The Node participated in JPND consortium project Spatiotemporal transcriptome and proteome analysis of α-Synuclein pathology in Parkinson’s disease.
- The Node hosted courses and workshops , including 3rd István Ábrahám Workshop on Superresolution and Advanced Imaging Microscopy and “European Joint Theory/Experiment Meeting on Membranes.”

HUNGARY



Medical and Preclinical Imaging Hungary

Node contact: György Trencsényi (Head of Node), Viktória Arató
Website: www.eurobioimaging-access.eu/nodes/medical-and-preclinical-imaging-hungary

FACILITIES
4

EXTERNAL USERS
4

USER PUBLICATIONS
23

REMOTE USERS
2

TRAINING COURSES ORGANIZED
2

STAFF INVOLVED
19.4

- The Node successfully organized the Advanced-Level Radiation Protection Training in Hungarian, which attracted participants from across the country.

A specialist operating in a cleanroom environment dedicated to radiopharmaceutical production at the Medical & Preclinical Imaging Hungary Node. The facility plays a crucial role in the manufacturing of radiopharmaceuticals, supporting both advanced medical research and patient care.

ISRAEL

Israel BioImaging

Node contact: Michal Neeman
Website: www.eurobioimaging.eu/nodes/israel-bioimaging

FACILITIES
7

EXTERNAL USERS
~50

USER PUBLICATIONS
30

REMOTE USERS
~15

TRAINING COURSES ORGANIZED
5

STAFF INVOLVED
100

- The Node contributed to the 2nd ANERIS workshop on “Underwater Imaging, Bio-optics, and Participatory Technologies”. The presentation highlighted the technology developments enabled by the ANERIS project at University of Haifa within the Israel BioImaging Node driving progress on AI tools for Automatic Underwater Image Restoration System.
- Five Node staff members participated in the 1st round of the EVOLVE-supported Euro-BioImaging mentoring program, paired with other imaging scientists from Europe and around the world.

ITALY

Advanced Light Microscopy Italian Node

Node contact: Dr. Seetharaman Parashuraman
Website: www.eurobioimaging.eu/nodes/advanced-light-microscopy-italian-node/

FACILITIES
5

EXTERNAL USERS
129

USER PUBLICATIONS
62

REMOTE USERS
27

TRAINING COURSES ORGANIZED
5

STAFF INVOLVED
17

- Technology developments include: Hyperspectral imaging system for rapid and multi-wavelength acquisitions and a resonant third-order sum frequency generation microscope.
- New imaging systems include: IonOptix Calcium and Contractility System, Inscopix nVue System, Imaris software for image analysis, and fNIRS system.

ITALY

Digital Imaging Multimodal Platform Neuromed - DIMP NEUROMED

Node contact: Lorenzo Carnevale
Website: www.neuromed.it

FACILITIES
8

EXTERNAL USERS
N/A

USER PUBLICATIONS
N/A

REMOTE USERS
N/A

TRAINING COURSES ORGANIZED
1

STAFF INVOLVED
9

- The Node acquired the Visualsonics Vevo3100 US and the Akoya Phenocycler-Fusion2.0.
- The Node underwent a full reorganisation in 2024 in preparation for a renewed service offer starting in 2025.

ITALY

MMMI - Multimodal Molecular Imaging Italian Node

Node contact: Enzo Terreno
Website: www.mmmi.unito.it

FACILITIES
9

EXTERNAL USERS
30

USER PUBLICATIONS
20

REMOTE USERS
24

TRAINING COURSES ORGANIZED
1

STAFF INVOLVED
29

- The Node won national & international grants for the development of novel imaging contrast agents.
- New equipment includes: radiosynthesis equipment, a new animal SPECT scanner (ɣ-CUBE; Molecubes, Gent, Belgium); a trimodal High-resolution SPECT/CT/OI and a OCT scanner, a Hyperpolarizer for HP-MRI, and a Dual Energy X-ray Absorptiometer (DEXA).
- Organized the 10th Conference on PET, SPECT, and MR Multimodal Technologies, Total Body and Fast Timing in Medical Imaging (PSMR2024) also including a “Training school on PET-SPECT-MR reconstruction”.
- Organized the VIII. Mediterranean Thematic Workshop in Advanced Molecular Imaging (MEDAMI2024).

ITALY

Phase Contrast Imaging Flagship Node Trieste

Node contact: Giuliana Tromba
Website: www.eurobioimaging-access.eu/nodes/medical-and-preclinical-imaging-hungary

FACILITIES
1

EXTERNAL USERS
23

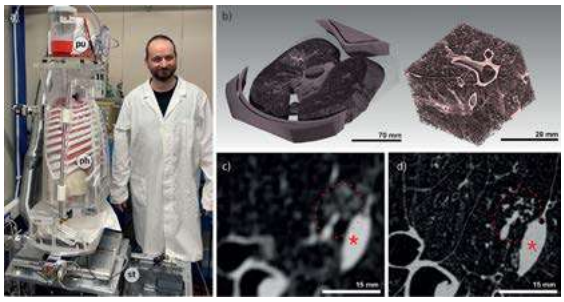
USER PUBLICATIONS
20

REMOTE USERS
0

TRAINING COURSES ORGANIZED
0

STAFF INVOLVED
2

- The new phantom built to make studies on human-like lungs kept inflated was equipped with a motion system to simulate breathing during the CT acquisitions.
- The Node acquired 2 new detectors with related optics. The minimum achievable pixel size is now 0.3 µm.



Lung imaging setup at the beam line, including the specially-designed positioning stage and resulting higher resolution. Figure from Dullin et al., European Respiratory Journal, 2024. CC BY 4.0.

NETHERLANDS

Correlative Light Microscopy Dutch Flagship Node

Node contact: Judith Klumperman
Website: microscopie.nl

FACILITIES
3

EXTERNAL USERS
N/A

USER PUBLICATIONS
N/A

REMOTE USERS
N/A

TRAINING COURSES ORGANIZED
N/A

STAFF INVOLVED
N/A

- The Node implemented new advanced workflows for user access for live-cell CLEM (https://pubmed.ncbi.nlm.nih.gov/37613701/) and on-section CLEM (https://pubmed.ncbi.nlm.nih.gov/37067272/).
- The Node contributed to continuing development of volumeEM workflows for organoids.
- The 2024 edition of Utrecht EM workhops (https://cellmicroscopy.nl/workshops/) was succesful with 24 participants from 11 countries trained on Resin-, Cryosetioning- and Immuno-Electron Microscopy Methods!

NETHERLANDS

Dutch High Field Imaging Hub

Node contact: Dennis Klomp
Website: www.highfieldmri.nl

FACILITIES
5

EXTERNAL USERS
10

USER PUBLICATIONS
50

REMOTE USERS
0

TRAINING COURSES ORGANIZED
2

STAFF INVOLVED
5

- New instruments: 1.5T selfscanner, 1.5T high gradient, 3T breast scanner, MRLinac and 0.6T MR scanners.
- The Node won several grants including the IHI project “Illuminate” and ERC advanced and Eurostars grants. read more on on p. 35.

ILLUMINATE

NETHERLANDS

Erasmus MC OIC - Advanced Light Microscopy Rotterdam Node

Node contact: Gert Kremers
Website: erasmusoic.nl

FACILITIES
1

EXTERNAL USERS
7

USER PUBLICATIONS
57

REMOTE USERS
0

TRAINING COURSES ORGANIZED
5

STAFF INVOLVED
8

- As a partner in the NL-Bioimaging roadmap application, the Node contributed to "Smart microscopy" and "Functional Imaging" work packages.
- The Node leads the Convergence Flagship consortium CIFIC to promote collaboration between the Erasmus MC and the TU-Delft.
- The Node takes part in the TTW Perspectief consortium 3D Nanoscale Imaging program.
- The Node actively teaches Masters' and PhD courses.

NETHERLANDS

Facility of Multimodal Imaging - AMMI Maastricht

Node contact: Marc A.M.J. van Zandvoort
Website: www.eurobioimaging-access.eu/nodes/facility-of-excellence-in-imaging---alm-and-molecular-imaging-node-maastricht

FACILITIES
3

EXTERNAL USERS
35

USER PUBLICATIONS
7

REMOTE USERS
20

TRAINING COURSES ORGANIZED
3

STAFF INVOLVED
12

- The Node acquired multiple new imaging systems, including a Lightcore multiphoton endoscope and Evident Intravital Multiphoton microscope combined with Refined systems Stimulated Raman Scattering (SRS).
- The Node participated in Plant imaging EU projects PETAL and RE-IMAGINE-Crops.
- The Node is a partner of the NL-BioImaging NWO Roadmap project.
- Technology development includes cryo-EM (Vitrojet and Vitrobot) as part of the participation in the IMPRESS project and multiphoton imaging.
- In the coming year, plans for a new animal facility will be finalised, which will be equipped with a whole set of newly obtained preclinical imaging techniques like microPET, microSPECT, microMRI, microCT (all in 2026) and an image (CBCT)-guided small animal irradiator (in 2025).

NETHERLANDS

High Throughput Microscopy Dutch Flagship Node

Node contact: Sylvia Le Dévédec
Website: www.universiteitleiden.nl/en/science/cell-observatory/

FACILITIES
2

EXTERNAL USERS
14

USER PUBLICATIONS
~20

REMOTE USERS
1

TRAINING COURSES ORGANIZED
4

STAFF INVOLVED
8.4

- The Node was integrated into the newly opened Exposome-Scan facility.
- The Node led technology development activities around Smart Microscopy, including collaborating with Leica to bring smart microscopy capabilities to the Stellaris Falcon system.
- The Node was awarded an Open Science grant funded by the OSCARS EU project.
- The Node performed outreach to the general public through “open hospital” public events of the Antoni van Leeuwenhoek hospital and lectures at the Boerhave Museum in Leiden.

NETHERLANDS

Preclinical Imaging Centre (PRIME) - Molecular Imaging Dutch Node

Node contact: Amanda Kiliaan, Wilma Janssen
Website: www.radboudumc.nl/en/research/technology-centers/imaging/preclinical-imaging-center

FACILITIES
8

EXTERNAL USERS
5

USER PUBLICATIONS
18

REMOTE USERS
0

TRAINING COURSES ORGANIZED
2

STAFF INVOLVED
7

- New system: The SARRP system for simple fluoroscopy guided radiotherapy as well as CT guided irradiation was installed at the end of 2024.
- The radiotherapy planning software, SmART-XPS Treatment Planning Software voor de SARPP small animal irradiator, was obtained through a grant from the Maurits en Anna de Kock foundation. It allows registration/image fusion of almost all imaging modalities available in PRIME.

NETHERLANDS

Population Imaging Flagship Node Rotterdam

Node contact: Ilva van Houwelingen, Stefan Klein
Website: imagingoffice.erasmusmc.nl

FACILITIES
1

EXTERNAL USERS
183

USER PUBLICATIONS
5

REMOTE USERS
N/A

TRAINING COURSES ORGANIZED
5

STAFF INVOLVED
2.5

- The Node launched a new website: imagingoffice.erasmusmc.nl.
- The Node hosted a symposium on the MDR (Medical Device Regulations).
- Mahlet Birhanu was awarded EVOLVE job shadowing to visit the Population Imaging Valencia Node.
- The Node developed many models and tools for improving data findability and interoperability.

NETHERLANDS

The van Leeuwenhoek Centre for Advanced Microscopy

Node contact: Mark Hink
Website: www.lcam.nl

FACILITIES
3

EXTERNAL USERS
9

USER PUBLICATIONS
~40

REMOTE USERS
0

TRAINING COURSES ORGANIZED
6

STAFF INVOLVED
9

- New instruments include: Leica Stellaris 8 confocal microscopes and Mica wide field/confocal fluorescence microscope.
- The Node worked on developments of FLIM-STED & single color lifetime biosensors.
- The Node organised the FEBS advanced course Functional imaging of cellular dynamics receiving 18 international participants visiting all LCAM labs for practical sessions.

NETHERLANDS

Wageningen Imaging and Spectroscopy Hub (WISH) - ALM and Molecular Imaging Node

Node contact: Johannes Hohlbein
Website: www.eurobioimaging-access.eu/nodes/wageningen-imaging-and-spectroscopy-hub-(wish)---alm-and-molecular-imaging-node-wageningen

FACILITIES
2

EXTERNAL USERS
19

USER PUBLICATIONS
>40

REMOTE USERS
0

TRAINING COURSES ORGANIZED
7

STAFF INVOLVED
3.1

- New instrument: Leica Stellaris STED system.
- The Node developed laser cutting and cellular isolation techniques at WLMC to aid a new Cell'Omics platform as an associated Facility to do single cell mRNA analysis.
- The Node participated in several large grants including NWO Photosynthesis project (4M EUR), Gates-ENSA-African Bridge grant (6M EUR), LettuceKnow 5 project (8M EUR).

NORWAY

NorMIC Oslo - Advanced Light Microscopy Node Oslo

Node contact: Oddmund Bakke
Website: www.mn.uio.no/ibv/english/research/infrastructure/facilities/life-science/imaging/normic

FACILITIES
2

EXTERNAL USERS
80

USER PUBLICATIONS
23

REMOTE USERS
0

TRAINING COURSES ORGANIZED
3

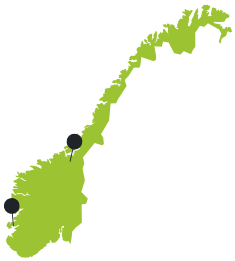
STAFF INVOLVED
5

- New equipment: a Zeiss LSM 980 with Airyscan and an Abberior Facility Line FLIM STED.
- The Node secured funding in order to acquire several new microscopes in 2025 and move to a new facility location.
- The Node hosted an international conference -BNMI 2024 in Geilo - with 120 participants.
- Hosted the 12th NorMIC image processing workshop in University of Oslo with 40 international participants.

NORWAY

NORMOLIM, Norwegian Molecular Imaging Infrastructure

Node contact: Lili Zhang, Jin Li
Website: www.normolim.w.uib.no



FACILITIES
3

EXTERNAL USERS
25

USER PUBLICATIONS
8

REMOTE USERS
1

TRAINING COURSES ORGANIZED
0

STAFF INVOLVED
6.5

- The Node is part of the PseudoPET project with Luxembourg that aims to use multimodal MRI and AI to generate “PET images” of hypoxia.

POLAND

Advanced Light Microscopy Node Poland

Node contact: Jędrzej Szymański
Website: www.amf.nencki.edu.pl

FACILITIES
3

EXTERNAL USERS
9

USER PUBLICATIONS
18

REMOTE USERS
1

TRAINING COURSES ORGANIZED
4

STAFF INVOLVED
8

- The Node ran a successful and competitive user access grant scheme based on funding from the Polish Ministry of Science and Higher Education.
- The Nencki Institute’s Center for Translational Research was created within the framework of the project “Biological and Biomedical Imaging Infrastructure - Bio-Imaging Poland.”
- The Node was involved in a number of activites related to science popularisation, including visits to our core facility of young researchers, students of arts and pupils.

PORTUGAL

Brain Imaging Network (BIN)

Node contact: Miguel Castelo-Branco
Website: www.uc.pt/en/brainimaging/

FACILITIES
13

EXTERNAL USERS
5

USER PUBLICATIONS
80

REMOTE USERS
4

TRAINING COURSES ORGANIZED
3

STAFF INVOLVED
7

- ICNAS was granted one of the nine projects selected for funding by the CaixaImpulse Health Innovation program in 2024, and won several other national and international grants.
- ICNAS and ULS Coimbra signed a protocol to promote research on electromagnetic stimulation.
- Researchers from CIBIT and ICNAS received recognition for their contributions to the field, including awards for innovative research and excellence in teaching.
- CIBIT and ICNAS actively participated in Brain Awareness Week, organizing events to educate the public about neuroscience and its impact on daily life.

PORTUGAL

Portuguese Platform of BioImaging (PPBI)

Node contact: Luisa Cortes
Website: www.ppbi.pt

FACILITIES
15

EXTERNAL USERS
202

USER PUBLICATIONS
315

REMOTE USERS
N/A

TRAINING COURSES ORGANIZED
35

STAFF INVOLVED
39

- PPBI released a new website and actively contributed to social media channels.
- The Node offered a concise theoretical and practical introduction to QuPath, an open-source software for quantitative pathology. The course was run as an hybrid event, with remote theoretical lessons and on-site hands-on sessions at 4 different PPBI nodes.
- The Node organised a 3-day practical workshop for bioimaging facility core staff and imaging enthusiasts who are responsible for providing training to core facility users and/or maintain microscopy instrumentation. It also covered how to choose the right tools for bioimage data processing and analysis, instrumentation quality control, best practices and facility management.

SLOVENIA

SiMBION

Node contact: Primož Pelicon
Website: www.simbion.mf.uni-lj.si/en/home-2/

FACILITIES **16**

EXTERNAL USERS **23**

USER PUBLICATIONS **27**

REMOTE USERS **8**

TRAINING COURSES ORGANIZED **2**

STAFF INVOLVED **9**

- New equipment at the National Institute of Chemistry, Ljubljana - TIRF with optical tweezers and Flow Cytometer Attune NxT.
- Several new national and international grants were won - National Institute of Chemistry was awarded EU project “Excellence Hub for Advancing Innovation in Gene Therapy, Gene H”, Jošef Stefan Institute was awarded 1 M EUR national funding for new tandem ion accelerator and 300K EUR for a 3-year research project, “Subcellular molecular imaging by means of MeV Secondary Ion Mass Spectrometry.”
- National institute of chemistry organized a Training course for laser ablation ICP-MS imaging, and Microanalytical centre, JSI, hosted an IAEA Training Workshop on Advances in Ion Beam Techniques and their Applications.
- The Biotechnical faculty at the University of Ljubljana is developing the 3D Atlas of Arthropods to advance digitalisation in education and bring biodiversity closer to biology students, high school students and nature enthusiasts.

SPAIN

Barcelona Live and Intravital Node

Node contact: Maria Calvo, Julien Colombelli, Nadia Halidi
Website: www.eurobioimaging-access.eu/nodes/barcelona-live-and-intravital-node

FACILITIES **3**

EXTERNAL USERS **294**

USER PUBLICATIONS **26**

REMOTE USERS **16**

TRAINING COURSES ORGANIZED **7**

STAFF INVOLVED **12**

- New instruments were installed at all 3 sites of the Node, including Stellaris STED-FLIM at IRB- Barcelona; HCS Opera Phenix with Robotic Arm and integrated incubator for imaging and screening as well as a Multiphoton Bruker Ultima 2Pplus system with a Coherent NIR tunable femtosecond dual laser at the University of Barcelona (UB) and Abbelight Safe360 and IXplore SpinSR at CRG.
- The Node was very active in teaching modules in multiple Masters and Doctoral programs.
- The Node contributed imaging and image analysis to a new Nature paper doi: 10.1038/s41586-024-08289-w.

SPAIN

Barcelona Mesoscopic Imaging Node

Node contact: Julien Colombelli, Pablo Loza-Alvarez
Website: www.eurobioimaging-access.eu/nodes/barcelona-mesoscopic-imaging-node

FACILITIES
2

EXTERNAL USERS
15

USER PUBLICATIONS
13

REMOTE USERS
3

TRAINING COURSES ORGANIZED
4

STAFF INVOLVED
11

- The Node built a new light-sheet microscope for macroscopic and clarified samples.
- The Node participated in a collaborative project with Vall d'Hebron Institut on Data-intensive bioimage analysis for advancing retinal degenerative diseases therapies.
- The Node developed a new label free technology - polarization based scattered lightsheet microscopy for cleared organs - to detect nanoparticle penetration in tumours https://doi.org/10.1038/s41565-023-01577-y.
- The Node participated in NEXTSCREEN Doctoral Network for imaging flow cytometry and development of the next generation automatic and data-driven diagnostics tools.

SPAIN

Barcelona Super-resolution Light and Nanoscopy Node

Node contact: Pablo Loza-Alvarez, Nadia Halidi
Website: www.eurobioimaging-access.eu/nodes/barcelona-super-resolution-light-and-nanoscopy-node

FACILITIES
2

EXTERNAL USERS
132

USER PUBLICATIONS
13+

REMOTE USERS
0

TRAINING COURSES ORGANIZED
6

STAFF INVOLVED
10

- Instrument upgrades include existing N-STORM and Leica SP8 microscope for broader applications. New instruments: Abbelight Safe360 and IXplore SpinSR
- The Node won funding through The mETamaterial foRmalism approach to recognize cAncer (TETRA) COST action project and European Regional Development Fund (FEDER).
- Global BioImaging awarded Eric Calatayud a travel grant for the GBI-LNMA 2024 course: Image analysis and data reuse through image repositories.

SPAIN

Advance Light Microscopy Node Bilbao

Node contact: Artur Escalada
Website: www.achucarro.org/facilities/imaging/

FACILITIES
2

EXTERNAL USERS
0

USER PUBLICATIONS
13

REMOTE USERS
0

TRAINING COURSES ORGANIZED
0

STAFF INVOLVED
5

- The Node completed its first year of operations as a Euro-BioImaging Node.
- New Instrument highlights: Nanoimager-ONI and Rapp Optogenetics Module.
- The Node was awarded approximately 1.25 Million EUR from CSIC, Spanish and Basque government grants for instruments and activities.

SPAIN

Radiology and Medical Imaging Valencia

Node contact: Aikaterini Vraka, Paula Doria
Website: www.eurobioimaging-access.eu/nodes/population-imaging-valencia

FACILITIES
6

EXTERNAL USERS
1

USER PUBLICATIONS
0

REMOTE USERS
0

TRAINING COURSES ORGANIZED
1

STAFF INVOLVED
41

- 5 projects were awarded in 2024: European SHAIPED, JANE-2, and EATRIS-CONECT projects; 2 National projects RICORS and DETERMIA.
- The Node actively participated in 22 EU and national-regional projects, being the leaders of the EU projects EUCAIM, SYNTHIA, and CHAIMELEON. Participation in REDES Investigación 2024 Call.
- The Node acquired the new AI software AIR Recon DL, new MotionFree Brain technology for PET Imaging,and new Air Coil Technology for scanning complex anatomy.
- Paula Jimenez was awarded EVOLVE job shadowing to visit IRCCS NEUROMED.

SWEDEN

Swedish National Microscopy Infrastructure

Node contact: Hjalmar Brismar; Julia Fernandez-Rodriguez
Website: www.nmisweden.se

FACILITIES
7

EXTERNAL USERS
174

USER PUBLICATIONS
130

REMOTE USERS
112

TRAINING COURSES ORGANIZED
35

STAFF INVOLVED
40

- Two new facilities joined the Node - Live Cell Imaging Core Facility at the Karolinska and Lund University BioImaging Center.
- New instruments: New SECOM system from DELMIC available at CCI, combining light and electron microscopy in a single device.
- Technology development: SciLifeLab-OMERO system in development supporting FAIR data principles and data management, including pilot at CCI.
- The Node also contributes to active technology development in vEM and next generation smart microscopy, thanks to SSF grants.

UNITED KINGDOM

The UK Node

Node contact: Georgina Fletcher
Website: www.eurobioimaging-access.eu/nodes/uk-node

FACILITIES
13

EXTERNAL USERS
197

USER PUBLICATIONS
147

REMOTE USERS
18

TRAINING COURSES ORGANIZED
14

STAFF INVOLVED
50.9

- New instruments include: Teledyne Laser Ablation System, Thermo Scientific iCAP MTX ICP-MS, HYPER Magnetic Particle Imaging (MPI) Based Localized Hyperthermia Platform, Nikon confocal with FRET/FLIM, Zeiss Gemini 460 FEGSEM, EI-FLEX (single molecule FRET), Refyn Mass Photometer (2MP).
- The Node's facilities were awarded many new grants from Wellcome Trust, BBSRS, EPSRC, MRC, Charity Trusts to support new equipment, staff, and technology development.
- The CCI Liverpool tested drug penetration in tissue for a new product of a Newcastle-based SME developing therapies for mouth cancers.
- The Node organised many events (including ELMI2024, ESRIC symposium, International Symposium on Metallomics) and hosted international job shadowing visitors.

At the Institute of Experimental Botany of the Czech Academy of Sciences, IEB imaging facility in Prague, part of Advanced Light Microscopy Prague Node, Virtual Reality is used for plant image analysis. Photo by Petr Klíma.

> *2024 was the first year of BMIN as a Euro-BioImaging Node and we saw a noticeable increase of our activities with the European imaging community, including inward and outward shadowing program.*

Julien Colombelli and Pablo Loza-Alvarez, BMIN - Barcelona Mesoscopic Imaging Node

Implementing new instrumentation is part of daily life at our Nodes. Here, it's a new HCS Opera Phenix at BLiVIN- Barcelona Live and Intravital Imaging Node.

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Å Communications based on design & layout by Solveig Eriksson

Many thanks to all our colleagues and friends, at the Nodes and beyond, who contributed time, texts, images and more to this document!

Front cover images:

Top right: Zebrafish brain image showing wound repair after two-photon-induced photoablation. Neurons (blue), microglia (magenta), and lipid droplets (green) are visualized. Image by Carmen de Sena-Tomás, IDIBAPS-UB. Barcelona Live and Intravital Node (BLivIN).

Top left: Christmas tree. Colourised scanning electron micrograph of branched hairs (coloured green) of Verbascum with its pollen (coloured orange). Image courtesy of Tomáš Figura, a user from the Advanced Light & Electron Microscopy Node Prague.

Bottom middle: The image shows a tumour in a cleared bladder (mouse), imaged with label-free scattered lightsheet microscopy, that holds nanobots (nanoparticles) for tumour treatment. Lightsheet Imaging at the Barcelona Mesoscopic Imaging Node. Image by Julien Colombelli (IRB Barcelona), samples by Meritxell Serra-Casanovas (S. Sánchez Group, IBEC). More insights in paper.

Bottom left: Light-sheet microscopy of blood vessels in the hippocampus of cleared mouse brains. Three dimensional recording of blood vessels in an intact, cleared mouse brain using an Isolectin-A647 conjugate. A Fire LUT was used for depth-cueing the image. By Jan Detrez, Antwerp University.

Back cover image:

Artistic photograph by Marcin Zięba (Finch Enterprise Photography). Used with permission from the Laboratory of Imaging Tissue Structure & Function, Nencki Institute, part of the Polish Advanced Microscopy Node.

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