Publication
Global BioImaging

Date
1st October, 2025

Website
globalbioimaging.org

GLOBAL BIOIMAGING

REVIEW 2024-2025

IMPRESSUM

THIS REVIEW IS A PUBLICATION OF GLOBAL BIOIMAGING

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Publication Date: October 2025

Global BioImaging has been made possible in part by a grant from the Chan Zuckerberg Initiative DAF, an advised fund of Silicon Valley Community Foundation.

TABLE OF CONTENTS

GLOBAL BIOIMAGING IN 2025

Global BioImaging is an international network that connects imaging infrastructures, networks, and scientists worldwide. Recognizing that scientific, technical, and data challenges transcend geographical boundaries, we bring together imaging facility operators and technical staff, scientists, managers, and science policy officers to share knowledge, exchange experiences, and build capacity internationally.

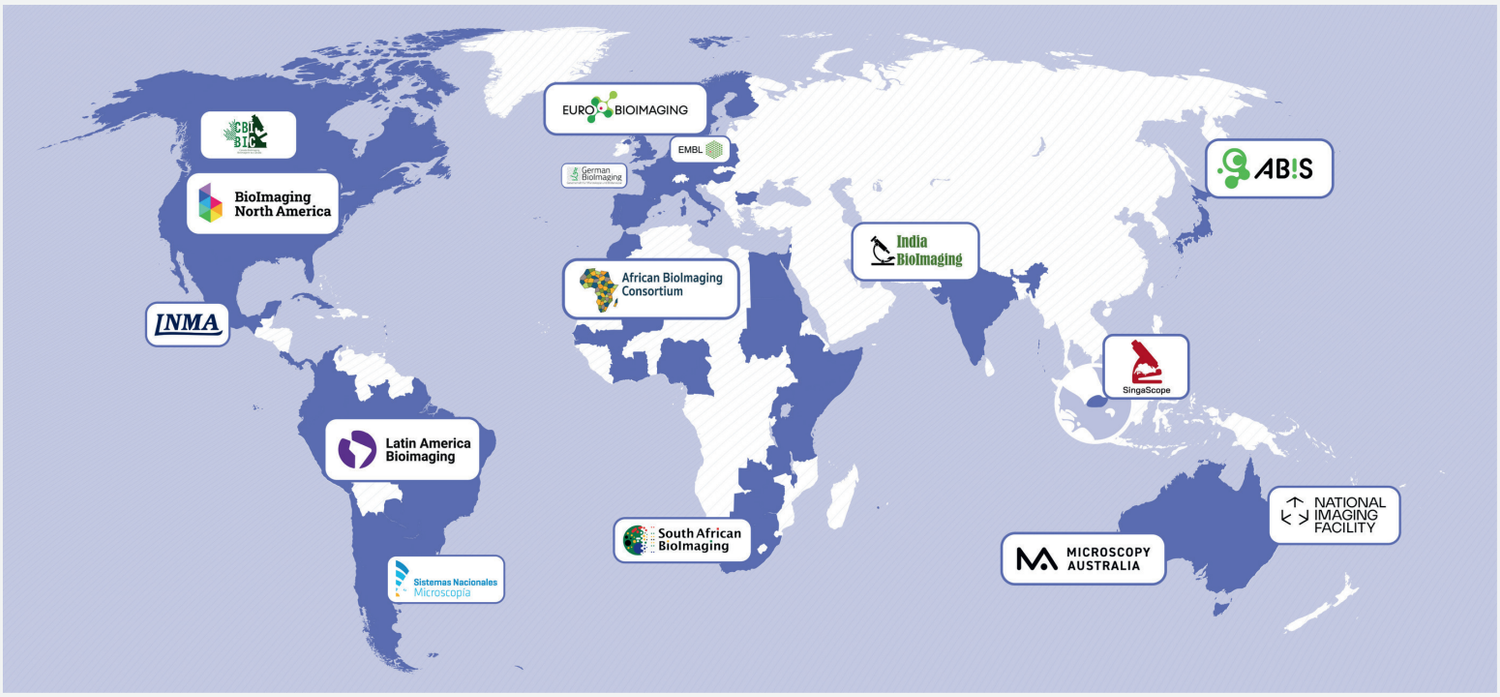
As of 2025, our network includes 14 partner organizations, all contributing to our mission to:

- To cooperate internationally and propose solutions to the challenges faced by the imaging community globally.
- To build a strong case towards the funders that imaging technologies and research infrastructures are key in the advancement of life sciences.
- To build capacity internationally, leveraging on each other's strengths and capabilities.

This year, we are excited to celebrate three major developments:

- Welcoming a 14th member: **German BioImaging** joins our global network.
- Partnership with **Microscopy & Analysis**: Our presence in Wiley's quarterly magazine, with a dedicated page, strengthens our voice and outreach.
- Partnership with the **Royal Microscopical Society**: A partnership that will expand opportunities for engagement and knowledge exchange across the microscopy community.

Through connection, collaboration, and capacity building, Global BioImaging works to strengthen the global imaging community — because together, we achieve more.



World map highlighting all 14 Global BioImaging partner infrastructures and networks. For more information about our regional partners, visit globalbioimaging.org.

GLOBAL BIOIMAGING IN 2025

14 Partner Infrastructures and Networks worldwide representing more than 65 countries.

Since it's inception in 2016, Global BioImaging has had 9 annual Exchange of Experience (EoE) conferences with participants from 48 countries.

Global BioImaging offers training courses for imaging core facility professionals and service providers with a unique focus on:

Facility Management, Image Data Management & Analysis, Train-the-Trainer

Global BioImaging offers international job shadowing for imaging core facility professionals & service providers to gain hands-on experience from peers worldwide.

Global BioImaging has 6 international working groups, 20-90 members each:

Career Paths for Imaging Scientists | Impact of Imaging Infrastructures | Biomedical Imaging Community | How to talk to your funder | Image data management | Training Core Facility Imaging Scientists

SEIZING GLOBAL NETWORKING OPPORTUNITIES:

A WEEK WITH IMAGING SCIENTISTS FROM LATIN AMERICA

Global BioImaging recently hosted nine outstanding imaging scientists from Latin America for a week of training, networking and exchanging experiences between researchers, technical staff and managers of imaging research infrastructures.

The workshop held at EMBL in Heidelberg sought to foster regional and international collaborations, while emphasizing the vital role of open-access research infrastructures and training opportunities in advancing life sciences globally.

The imaging scientists brought a diverse range of expertise, from machine learning-based approaches for medical imaging to custom-made super-resolution microscopy and imaging of environmental samples exploring Latin America's rich biodiversity.

Not only in terms of research interests and fields, also their home countries were distinct and spanned the entire continent. "It took this trip to Heidelberg for all of us to meet and connect", Andrés Romero-Carvajal from the Laboratorio de Biología del Desarrollo from the PUCE University in Quito, Ecuador, remarked.

This meeting between scientists from Latin America and Europe, with different backgrounds and expertise aimed to build a bridge to shared opportunities and resources.

Image credit: Photolab/ EMBL

GLOBAL BIOIMAGING
growing collaboration

Coming from Argentina, Brazil, Costa Rica, Ecuador, Guatemala, Honduras, Paraguay and Uruguay, the imaging scientists met at EMBL in Heidelberg to attend the week-long study visit.

One such initiative is Latin America BioImaging (LABI), a regional network represented by Andrés Olivera from Uruguay, one of the workshop participants. LABI's mission is to build capacity within Latin America and give researchers access to cutting-edge imaging technology located in different institutes across the continent. "We have all the potential in our countries," said Olivera. "What we lack is easy access to high-end microscopes, key consumables and training. With our community, we aim to connect researchers and infrastructures to fill this gap."

The study visit kicked off by identifying key challenges faced by the Latin American bioimaging community, setting the stage to discuss strategies to overcome them throughout the rest of the week. Many of these challenges echo those encountered globally, such as:

- **Lack of recognition** of core facilities' critical role in advancing life sciences
- **Insufficient funding** not only for equipment but also for long-term instrument maintenance and sustainable support for trained personnel
- **Limited access** to or knowledge of training opportunities
- **Uncertain career prospects** and lack of institutional support
- The challenge of **offering training** knowing that many researchers may leave the country for better opportunities elsewhere.
- **Undervaluation of local capabilities**, with a perception that technologies from regions like Europe or the U.S. are inherently superior

Establishing bonds between industry and academia

During the workshop's Industry Networking Day, participants discussed the systemic challenges of collaborating with industry. Establishing contacts with companies often involves navigating layers of bureaucracy and geographical barriers, leading to inefficient project planning. Tight funding deadlines add another layer of difficulty when seeking partnerships for research projects. Despite these challenges, collaborations between research and industry remain crucial, as scientific advancements drive innovation and industry growth, and vice versa.

Open discussions with industry representatives such as Herbert Schaden from ZEISS[1] and Robert Kirmse (Leica Microsystems), and Euro-BioImaging's Industry Board Coordinator Claudia Pfander led to actionable strategies to tackle these regional challenges, including building better regional networks with instrument manufacturers.

Participants also explored the alignment between some of the biomedical research projects presented and industry technologies – and several projects led by the Latin American scientists demonstrated immediate potential for industry involvement.

Left: A tour with Robert Kirmse through the Leica Open Innovation Labs at EMBL, Heidelberg. Right: Networking with coffee and cake. Image credits: Euro-BioImaging Team and Photolab/ EMBL

[1] Chair of the Euro-BioImaging Industry Board

For example, Carolina Centeno from Costa Rica discovered that extracts from blackberries promote skin regeneration after UV damage, such as that caused by sun exposure. She explained how her group is also trying to collaborate with the medical device industry by providing evidence obtained with fluorescence and electron microscopy. In recent years, this industry has grown significantly in Costa Rica, so enhancing its diversification and quality benefits not only the industry itself but also research centers and the country in general.

Another impactful project is the development of AI-based tools for early prediction of fetal abnormalities by Andrea Lara from Guatemala. This tool, which could revolutionize prenatal care, is designed to be accessible to healthcare services in rural areas, with the aim of reducing fetal and maternal mortality. Lara's team is collaborating with midwives, nursery schools, and local hospitals to implement this innovative technology.

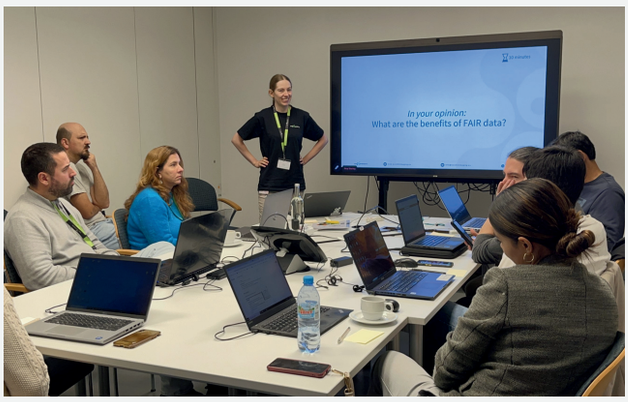
These examples showcase the immense potential for industry collaboration to accelerate the development of biomedical treatments. One of the key missions of the workshop was to identify ways to increase visibility for such projects and foster stronger ties between research and industry. By highlighting stories like Centeno's and Lara's, the workshop demonstrated how vital it is to engage industry partners and drive forward innovation in both Latin America and beyond.

The study visit was initiated by the EU-Latin America Countries Working Group on Research Infrastructures (EU-CELAC) and funded by the European Commission. Co-chaired by the European Commission and Uruguay (representing LAC countries), this working group aims to align and harmonize bi-regional policy coordination, sharing best practices in the development and mapping of research infrastructures.

FAIR Data in BioImaging

While imaging technology and access to training are essential, they are only one aspect of research projects that culminates in data management, analysis, and storage—all critical steps before reaching the goal of publishing in high-impact journals.

Recognizing these data challenges, one day of the study visit was dedicated entirely to the principles of FAIR data (Findable, Accessible, Interoperable, Reusable) implementation. The participants also explored open-access analysis tools like ilastik, developed at EMBL, which are designed to simplify image analysis and ensure that data is processed and stored efficiently.



The imaging scientists and data experts discuss the principles and advantages of FAIR data in hands-on workshops. Bottom: FAIR image data steward Isabel Kemmer and Maria Mirza, scientific project manager, both from Euro-BioImaging, present FAIR data implementation strategies and foundingGIDE (Global Image Data Ecosystem).

Train to train

Another central objective of the study visit was to identify training opportunities, such as workshops, job shadowing, and specialized courses, offered by the global bioimaging community. Many of these programs aim to equip participants with the skills to return to their home institutions and share their knowledge with colleagues, students, and future scientists. This "train-the-trainer" model is essential for building capacity and fostering the next generation of leaders in bioimaging.

Virginia Helena Albarracin from the Centro Integral De Microscopia Electrónica, Argentina, explores the World of Molecular Biology exhibition at the EMBL Imaging Center. Image credit: Photolab/ EMBL

The European Molecular Biology Laboratory (EMBL), with its open-access imaging infrastructure, served throughout the week as an exemplary model of how innovation can thrive through shared vision, resources, and effective outreach strategies. While access to resources remains a significant bottleneck, especially in low- and middle-income regions, the EMBL model underscored the importance of visibility in the scientific community—an issue that can be universally addressed regardless of resource limitations.

Ensuring that research is visible not only among peers but also to governments and other stakeholders is crucial for building a sustainable future. Greater visibility enhances collaboration, fosters partnerships, and increases the likelihood of securing funding through compelling impact reports. Recognizing this, the workshop placed a strong emphasis on science communication, highlighting how sharing research and harnessing the power of images can engage broader audiences and amplify the impact of bioimaging advancements.

Discussing outreach strategies with external communications officer Marianna Childress Poli from Euro-BioImaging and creative team lead Tabea Rauscher from EMBL Communications. Image credit: Photolab/ EMBL

Building a Sustainable Future for BioImaging

Increasing the visibility and impact of research infrastructures in both Latin America and Europe requires effective communication strategies, the dissemination of information about events and workshops, and staying updated on cutting-edge technological advances.

This week's workshop offered a glimpse into the vast potential of imaging in Latin America, from electron microscopy research in Argentina to unraveling the evolution of reophilic fish of the Amazon. Whether focused on basic research or biomedical and agricultural applications, the projects presented highlighted the region's rich diversity and innovation. To sustain and grow this capacity, communication channels are being established to spread awareness about training and funding opportunities within the global bioimaging network. More importantly, the connections made during the workshop between the participants represent a significant first step in integrating some of the countries not yet represented by LABI into the network, including Costa Rica, Guatemala and Paraguay, to foster collaboration and strengthen regional ties.

The future of bioimaging is collaborative

By empowering scientists from diverse regions and enabling global partnerships, we unlock new dimensions of innovation, advance basic and applied research in the life sciences, and work together to find solutions for a sustainable future.

*Note: Find out more about our work on our website **www.globalbioimaging.org.***
This group will continue to foster collaborations among its members and with European colleagues. Global Bioimaging is excited to support these exchanges, and everyone is welcome to participate. If you're based in Latin America, be sure to join LABI. For Imaging Scientists in Europe, keep an eye on Euro-BioImaging for updates.

FROM MOLECULES TO HUMAN
- BRIDGING IMAGING ACROSS COMMUNITIES AND SCALES

An international consortium of imaging scientists launched a new format for training in translational imaging research: the first-ever M2H – Molecules to Human boot camp. This unique training program brought together 24 scientists from across the globe to learn how to design and implement multimodal imaging workflows, spanning scales from molecules to entire organisms.

Imaging biological systems requires a wide range of technologies and experimental approaches, from advanced microscopy capturing molecular details to clinical imaging tools visualizing entire organs and tissues. Despite the different approaches, researchers working in either microscopy or biomedical imaging share the common goal of advancing our understanding of health and disease. Yet they often work in isolation, limiting opportunities for collaboration and transformative discoveries.

To address this divide, an international consortium (see information box below) conceptualized a two-week boot camp titled “Molecules to Humans (M2H)”. Hosted by the Danish BioImaging Infrastructure in Copenhagen and Aarhus, Denmark, and supported by the Chan Zuckerberg Initiative, the workshop aimed to build capacity and foster cross-disciplinary networking.

The scientific program was designed to introduce both clinical and preclinical imaging technologies alongside advanced microscopy techniques. It combined lectures on application and technology with hands-on sessions covering sample preparation, image acquisition setups and analysis.

“Normally when we teach, we focus on making students experts in a specific technology; how to use it to extract data,” explained Clara Prats, Associate Professor at the University of Copenhagen and Director of the Danish BioImaging Infrastructure. But in M2H, the goal was to give a broader overview of the technologies and all the powers and limitations from both preclinical and clinical imaging, and microscopy. So that we could get a basic common vocabulary and ground to start talking about **how to create workflows across disciplines, and pass on the mindset to co-create multimodal imaging workflows**.”

Image credit: Danish BioImaging

To bring the M2H curriculum to life, the organizers collaborated with colleagues across two institutions – many working together for the first time – and received invaluable support from post-doctoral fellow Anita Dittrich and PhD student Jon Vegara, who shared their scientific questions on two animal models as a basis for creating multimodal imaging workflows.

“One thing we’ve gained is a stronger connection with colleagues in our field,” Prats shared. “Really helpful, truly collaborative and nice people that want to contribute.”

Workshop participants gather around Anita Dittrich to see how to perform heart surgery on an Axolotl.

Imaging Techniques and Data Analysis

The participants spent the first week of the boot camp in Aarhus delving into biomedical imaging, including theoretical and hands-on training in modalities such as MRI, PET and OCT. They then moved to Copenhagen to explore advanced microscopy techniques, ranging from light-sheet to super resolution microscopy.

For Kelly Nyanchama, a junior malaria research fellow from the Kenya Institute of Primate Research, who is also obtaining her masters in Microbiology and Parasitology in Uganda, the boot camp was an eye-opening experience.

“I really fell in love with light sheet microscopy,” she said. Along with the technique itself, Nyanchama was excited to learn about the data analysis, a skill that would be invaluable upon her return to her home institution, where resources are often limited.

“I want to see if I can juggle both microscopy and data analysis when I get back,” she added. “**The biggest take away [from the workshop] for me was the analysis side**, since in my masters I need to do a lot of analysis. I want to work with tissues and I need to be able to analyze the samples myself because I don’t have enough funding [to outsource the analysis].”

The Power of Diversity

One of the guiding principles of the M2H boot camp was to include historically underrepresented communities alongside traditionally represented groups. This was reflected in the participants: 24 international scientists from around the world, from early-career researchers to experienced core facility managers, were brought together to learn, network, and innovate.

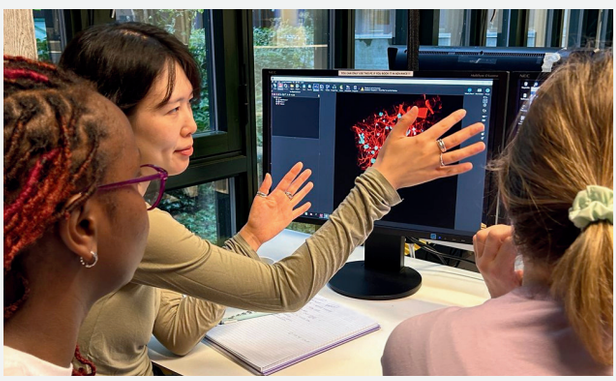
Consequently, the workshop's impact extended beyond the technical skills acquired – it also fostered invaluable personal and professional connections.

“What I really enjoyed, was the diversity of people,” reflected Brian Tse, facility manager of the Preclinical Imaging core facility at the Translational Research Institute in Brisbane, Australia. “I enjoyed mentoring people from different cultures who are from early-stage core facilities but at the same time I was being mentored by them. Knowing they are working with fewer resources and still doing fantastic work was inspiring.”

For Tse, the experience also provided new insights into the real-world challenges faced by researchers globally.

“Being aware that there are researchers from across the world who are deeply impacted community-level-wise by different conditions or infections puts me into perspective when I work with my researchers who work on malaria or other infectious diseases,” he continued. “It just gives a different perspective. I think often, [scientists at my facility] might do research rather as an academic exercise. Really good science, but driven by a different motivation.”

Tse also appreciated the balance between intense learning and social engagement. “The organizing team did a fantastic job. In addition to the high-level learning, they introduced social events that really enhanced the experience, because that allowed us to get to know each other better, so that when we did group work or data analysis sessions, we were a better team. **When you’re happy and you know the people around you, learning becomes much more effective.** It was really wonderful.”



Working on the light sheet 3D image analysis project at the Danish BioImaging Infrastructure Image analysis Core Facility (https://www.dbi-infra.eu/iacf).

Nyanchama who shared similar sentiments, found the boot camp particularly impactful for her own research. “This was important for me to understand what exactly are people doing out there and try to bring back those lessons to my lab and also to my school,” she explained.

“It was quite interesting to learn about core facilities because we don’t have a lot of those here; even just the labs themselves were amazing. It was very interesting to interact with the core facility managers to see their perspective on things. Just interacting with the team opened up my thinking – like **almost every research question can be answered through microscopy.**”

Nyanchama was also introduced to practical tools that would benefit her research back home, including fluorescence microscopy. “I want to use a fluorescence microscope for some of my bench work. One of the things we learned is which types of slides to use for example; we also talked about some special dyes from the Janelia Research Campus that are more affordable for researchers.”

Workshop participants Kelly Nyanchama and Brian Tse comment on the most immediate impact of their M2H experience.

Nyanchama: “I actually just suggested to our director to get an OpenScope because we have very limited funding and we don’t have many instruments. ***If we have the OpenScope we can serve other people coming to do their imaging and also create networks to work with us****.”*
Tse: “I love light sheet, I think that’s very fascinating; I also liked learning about multiphoton microscopy, and our institute’s microscopy core facility recently purchased one. I would like to see both facilities working together, and we already agreed on that. We talked about having a shared animal ethics, which would allow us to use mice for training on multiple systems, and we’re currently arranging that.”

A Collaborative Future

Looking ahead, the boot camp's organizers and participants emphasized the importance of continuing the momentum.

“Creating this opportunity was really unique,” said Prats. “It is necessary not only at a global but also local level – we even discussed with our colleagues at Aarhus University that we would like to have a follow-up meeting if we can raise funds to do something similar at the Danish level. Because this is an essential thing. **To utilize the power of the technologies in microscopy.** We need to really understand what they can do and they need to understand what we can do to do this.”

Sonia Diaz, Coordinator of the Danish BioImaging Infrastructure, noted that the positive feedback from the participants made it clear that there is a strong demand for continued collaboration. She is now helping them organize monthly online meetings to keep presenting their work and fostering collaboration.

“The students and participants, they all said they want to see it happening again,” Prats remarked, emphasizing that ongoing education will be key to making a lasting impact.

“Many of the participants from resource-limited settings said that what they need most is education within their communities,” she continued. “While infrastructure and equipment are important, we can do a lot without so much money by educating people, one can even do this remotely. It’s about organizing and making this knowledge accessible.”

Antje Keppler, Global BioImaging Coordinator and Director of Euro-BioImaging Bio-Hub, also reflected on its success and potential. “After this tremendous achievement, we've shown what’s possible. We’re now exploring future funding opportunities to sustain and expand these efforts, building a lasting, collaborative network to push the boundaries of imaging research across disciplines worldwide.”

This article was written by Sophie Winter from Global BioImaging.

Impressions from the M2H workshop. Participants learn how to create imaging profiles for both bright field and fluorescence digital pathology imaging in a Zeiss Axioscan 7 (top left), work on their image analysis projects (top right), and their multimodal imaging workflow presentations (bottom left). During the M2H boot camp, a Global cooking event allowed participants to share their recipes and cook together, learning from each other and sharing their culinary cultures. In the bottom right image, participants are cooking a dish from Georgia called Khinkali.

For more personal experiences and take aways from the workshop, Sonia Diaz collected pictures and video testimonials from the participants, available at https://tinyurl.com/5dsh8hjv.

Funding Support

The M2H boot camp was made possible through the generous support of the Chan Zuckerberg Initiative.

In a Nutshell

- **Interdisciplinary Imaging**: The boot camp demonstrated how imaging communities can collaborate to develop multimodal workflows, integrating different imaging modalities from both preclinical and clinical, and microscopy-based perspectives. This overlap enables researchers to bridge small and large scales in imaging, from molecular details to whole organisms, enhancing the capabilities of each field.
- **Power of Diversity**: The program's diversity in experience levels, cultural backgrounds, and resource availability fostered a unique environment of creativity and problem-solving. Participants learned from each other's distinct approaches, showing that diversity is essential for advancing science and innovation, particularly in the global imaging community.
- **Essential Role of Data Analysis in Imaging**: The training emphasized that understanding and processing imaging data is as important as the imaging techniques themselves, especially for researchers in resource-limited settings who need efficient, scalable ways to handle data.
- **Networking and Community-Building for Sustained Learning**: The boot camp fostered a lasting international community of scientists who will continue collaborating through monthly virtual meetings. This commitment to ongoing knowledge-sharing underscores the importance of community in scientific advancement, enabling researchers to exchange resources and insights across borders.
- **The Value of Soft Skills**: Beyond technical expertise, participants benefited from social activities and collaborative exercises. These activities strengthened teamwork and made group work more effective, demonstrating that interpersonal connections are invaluable in scientific training and can enhance learning outcomes.

Information Box: From Concept to Reality - The M2H Training Workshop Team

The M2H international consortium is a network of microscopy and biomedical imaging communities and imaging facilities around the world who are supported by the Chan Zuckerberg initiative. They are: 1) Global BioImaging as project lead (European Molecular Biology Laboratory), 2) the African BioImaging Consortium (ABIC), 3) Africa Microscopy Initiative (AMI), 4) Association of Biomolecular Resource Facilities (ABRF), 5) Biomedical Science and Research and Training Centre (BioRTC), 6) Biomedical Imaging Organization for South East Europe (BIO-SEE), 7) Consortium for Advancement of MRI Research and Education in Africa (CAMERA), 8) Euro-Bioimaging ERIC, and 9) Latin America Bioimaging (LABI).

The idea and concept for the M2H training boot camp was first developed by Teng-Leong Chew (Chair of Global BioImaging from 2022 until 2024) and Udunna Anazodo (CAMERA). After it received funding from Chan Zuckerberg Initiative, it was implemented by the M2H international consortium including Antje Keppler (Global Bioimaging) as project PI, Gleb Grebnev (Global Bioimaging) as project manager, as well as Caron Jacobs (ABIC), Richard Cole (ABRC), Michael Reiche (AMI), Mahmoud Maina (BioRTC), Naira Ayvazyan (BIO-SEE), Johanna Bischof (Euro-BioImaging), Christopher Wood (LABI), Linda Chaabane (Euro-BioImaging), Narine Sarvazyan (BIO-SEE), and Iris Asllani (CAMERA).

The M2H boot camp required extensive logistics, specialized facilities in both biological and preclinical imaging, and a carefully balanced program that bridged disciplines and integrated diverse scientific perspectives. To select a suitable host, the Global BioImaging coordination team in close collaboration with the Euro-BioImaging Bio-Hub launched an open call for Euro-BioImaging Nodes. Owing to their experience in cross-institutional teaching and focus on workflow development, the Danish BioImaging Node from Euro-BioImaging was selected as hosting institution and tasked with designing the program. Together with Professor Michael Pedersen and post-doctoral fellow Anita Dittrich from Aarhus University, and Pia Nyeng from Roskilde University, Clara Prats then further developed and implemented the scientific program centered around the biomedical imaging infrastructure at Aarhus University and the microscopy facility in the Faculty of Health and Medical Sciences, University of Copenhagen. You can find more information on the M2H project here.

GLOBAL BIOIMAGING TRAINING COURSES 2024:
EMPOWERING IMAGING CORE FACILITY PROFESSIONALS WORLDWIDE

Staff scientist positions in imaging facilities, infrastructures, or research labs have become increasingly appealing career options: These roles offer the unique opportunity to work closely with advanced imaging instruments while contributing to diverse and impactful research. Over the last two decades, the availability of facility management positions has expanded, opening exciting career pathways but also presenting new challenges: How can scientists transition into management roles effectively? How can imaging facilities be managed to enhance user experience and operational excellence?

Global BioImaging has been addressing these needs by offering tailored training programs for imaging scientists in support roles across the globe. In 2024, we organized training courses in Mexico, Brazil, and Singapore, each focusing on key aspects of image data management and facility management and addressing region-specific needs. Led by GBI's Training Program Manager, Gleb Grebnev, in collaboration with regional partners, these programs not only built individual skills but also created a ripple effect, as participants—many of whom are educators and trainers themselves—continue to disseminate their knowledge within their own institutions.

Enhancing Image Data Management in Mexico

Our first training of 2024 took place in Mexico, co-organized with the Laboratorio Nacional de Microscopía Avanzada (LNMA), a GBI partner organisation in Mexico. This week-long course centered on image analysis and reuse of image data using repositories, equipping participants with essential technical skills and insights.

Topics covered included:

- **Concepts in Image Analysis:** Fundamentals necessary to efficiently use advanced methods
- **Hands-On Software Training:** Using ImageJ/Fiji through graphical user interfaces (GUIs)
- **Programming Skills:** Introduction to ImageJ macro language and Python programming, also for using Napari software
- **Data reuse:** Detailed exploration of the BioImage Archive, a free and publicly accessible image repository for publishing and reusing images
- **FAIR Principles and Metadata:** Exploring the FAIR principles and REMBI standards for biological images to enhance reusability of microscopy data

Participants had the chance to work with the BioImage Archive, a publicly available online repository for biological images, and gained practical insights into enhancing their data workflows. Beyond the technical training, the course facilitated invaluable networking opportunities through planned social events, fostering a sense of community among participants and faculty. Visit our webpage (https://tinyurl.com/gbi-lnma) for more details regarding the course organization, speakers and program.

Image credit: Yuriney Abonza Amaro, Instituto de Biotecnología, Universidad Nacional Autónoma de México

GLOBAL BIOIMAGING growing collaboration

Strengthening Facility Management in Latin America

Two months later, we moved to Rio de Janeiro, Brazil, for a course focused on facility management, co-organized with CENABIO, a multi-user imaging facility at the Federal University of Rio de Janeiro and a member of the Latin America BioImaging (LABI) network.

This comprehensive program addressed critical aspects of facility operations, including:

- **Managing Imaging Facilities:** Setting-up and operating imaging core facilities across North America, South America, and Europe
- **Sustainability Models:** Developing effective cost recovery strategies, including collaborations with industry partners
- **User Training and Workshop Programs:** Highlighting success stories in developing training programs in North and South America
- **Pedagogy for User Training:** Applying scientic principles of pedagogy to enhance user training and workshop programs
- **Quality Control in Imaging and International Standards:** Introducing ISO standards for imaging facilities and discussing their benefits

By targeting these facility management topics, the course equipped participants with the tools to create sustainable, high-quality imaging environments. The collaboration with CENABIO and LABI also underscored the importance of regional networks in advancing imaging sciences. Visit our webpage (https://tinyurl.com/gbi-brazil) for more details regarding the course organization, speakers and program.

Image credit: Marcia Attias, Instituto de Biofisica Carlos Chagas Filho, Universidade Federal do Rio de Janeiro

Expanding Career Perspectives in Southeast Asia

Our final course of the year brought us to Singapore, where we partnered with the GBI partner infrastructure SingaScope to explore advanced topics in facility management. Held at the A*STAR Microscopy Platform in Biopolis, this course was tailored for imaging core facility professionals. It provided a deep dive into many topics, for example:

- **Facility Operations:** Facility design, operation, budgeting, and cost recovery
- **Career Development:** Exploration of career paths in imaging cores as well as integrating scientific expertise with management training, such as Master of Business Administration (MBA) principles
- **Training and Education:** Leveraging educational tools like Microtutor, the Global BioImaging Virtual Training Platform, and train-the-trainer methodologies increase access and scope of training
- **Maintenance and Quality Control:** Ensuring operational excellence in cutting-edge facilities using reservation tools, ISO standards
- **Global Perspectives:** Insights into imaging cores across the globe including Australia, Southeast Asia, and beyond

This course highlighted the growing career potential in facility management and the importance of international collaboration. Through a mix of seminars and moderated sessions, participants gained practical skills and built strong global connections, reinforcing Global BioImaging's commitment to fostering innovation in imaging sciences. Visit our webpage (https://tinyurl.com/gbi-singascope) for more details regarding the course organization, speakers and program.

Image credit: SingaScope

Conclusion: Multiplying Impact Across the Globe

The 2024 training courses reflect Global BioImaging's mission to empower imaging scientists and advance global excellence in imaging facilities.

By addressing region-specific challenges, fostering collaboration, these training courses strengthen the global imaging community. As we look ahead to 2025, we remain committed to driving innovation and supporting the imaging scientists who are at the heart of scientific discovery.

This article was written by Sophie Winter from Global BioImaging.

A GLOBAL CALL TO ACTION:
LEADING IMAGING SCIENTISTS OUTLINE ROADMAP FOR EQUITABLE MICROSCOPY TECHNOLOGY ACCESS

May, 2025- A new Comment published in Nature Methods, titled "Challenges of microscopy technology dissemination to resource-constrained communities", brings timely and critical attention to the global disparities in access to microscopy technologies—tools essential to modern biological research and discovery. Authored by an international team of leading imaging scientists, the piece is a compelling call to dismantle the barriers that prevent the widespread adoption of these tools in low- and middle-income countries (LMICs).

The article draws on outcomes from the Microscopy Technology Dissemination to Underserved Communities conference, held in May 2024 at the Howard Hughes Medical Institute's Janelia Research Campus.

It underscores that successful dissemination goes far beyond the distribution of hardware: it requires sustained coordination, education, infrastructure, and policy reform.

"With the attention of international funders pivoting toward open-access microscopy research infrastructure and local expertise enhancement, microscopy dissemination is a prominent topic in the global scientific dialog," the authors note. However, "Sharing is not synonymous with dissemination. Technology development is only as successful as its ability to address unmet needs."

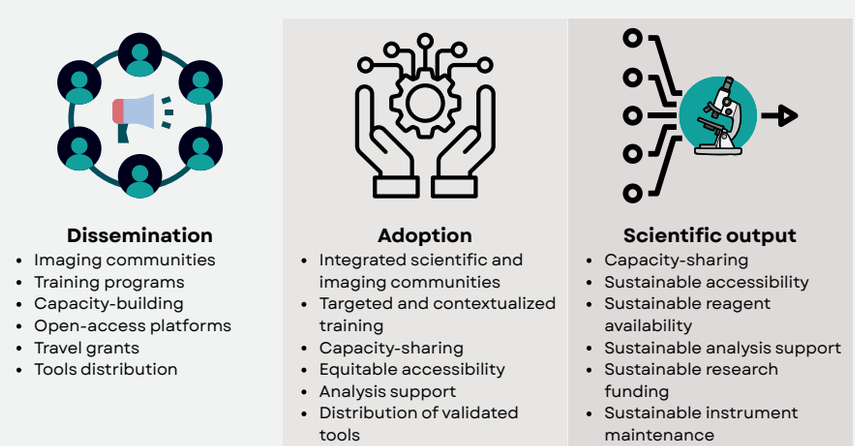
The comment explores global initiatives—open-access platforms, regional imaging networks, and community-driven resource sharing—that are actively working to address these challenges.

Yet it emphasizes that, without stronger local investment, targeted education focused on practical applications of different imaging technologies, and the reduction of bureaucratic barriers (such as restrictive VISA processes, sample transport hurdles, and import taxes), these technologies will remain out of reach for many.

Two major strategies are identified:

- **Local empowerment:** Promote low-cost, yet research-grade microscopy tools validated for rigorous scientific use—dispelling the myth that meaningful imaging is always expensive.

- **Global accessibility:** Remove barriers to advanced imaging instruments and expertise through streamlined international policies and cooperation.



ImageL "Necessary ingredients" identified in the paper (modified from Figure 1).

The authors further advocate for locally relevant training programs, standards to assess equipment performance, and policy frameworks that reflect the international nature of scientific discovery.

“The global imaging community has done an exceptional job, not only in building the necessary groundwork, but also in setting an excellent example of how communities with disparate resources can unite in a purpose,” the authors note.

“However, there is indeed a missing next step. The global imaging community has not yet set technology uptake to facilitate scientific output as the final goal.”

This thought-provoking article serves as both a roadmap and a call to action—urging institutions, governments, and the global scientific community to reframe technology dissemination as a holistic, strategic effort. Its message is clear: for science to be truly global, access to its tools must be equitable, meaningful and sustainable.

Global BioImaging strongly supports the message of this article. Many of our partner networks across the world are actively working to reduce the very bottlenecks highlighted—advancing the dissemination and long-term adoption of microscopy technologies in all regions.

Read the full article here:
https://www.nature.com/articles/s41592-025-02690-7

IMAGING 4 ALL:
ADVANCING EQUITABLE ACCESS TO IMAGING GLOBALLY

In late autumn of 2025, Global BioImaging launched the first call of the i4A initiative, funded by the Wellcome Trust. This unique funding opportunity aims to provide equitable access to imaging technologies for LMIC researchers, 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.

Imaging technologies have a profound impact on science and society, serving as essential tools for research, disease diagnostics, and healthcare. Their diverse applications - from visualizing single molecules to clinical samples - make them indispensable across scientific disciplines. However, a stark divide exists between developed economies with well-funded research infrastructure and Low/Middle-Income Countries (LMICs), where access to imaging resources remains limited.

The Imaging 4 All (i4A) initiative, funded by the Wellcome Trust and coordinated by Global BioImaging (GBI)*, is actively working to address this divide by providing funding for researchers and imaging facility professionals from LMICs to access imaging technologies and expertise at host institutions worldwide.

I4A at a Glance

As part of its core mission, i4A is dedicated to expanding access to cutting-edge imaging technologies and fostering a more inclusive global research community. The initiative facilitates knowledge exchange and skill development by funding visits to international host institutions. Researchers receive hands-on training in areas such as sample preparation, image acquisition, data processing, preliminary analysis, and facility management, and perform experiments that drive their research forward.

By reducing financial barriers, i4A helps researchers overcome economic obstacles that often limit access to advanced imaging technologies and specialized training. Additionally, the program actively promotes global community engagement, integrating researchers from LMICs into the international imaging network, strengthening collaborations, and ensuring a more equitable scientific landscape.

The First Call: Key Insights and Impact

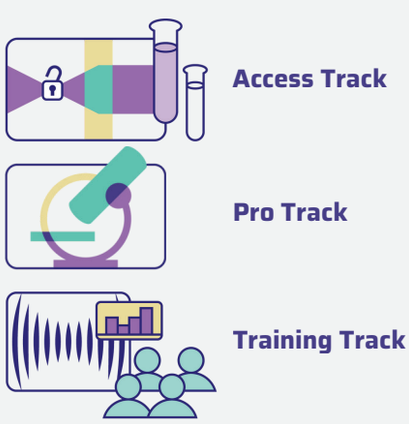
During the first call, applicants could choose between three funding tracks, illustrated above :

1 Participation in national or international **in-person training workshops** or courses related to biological or biomedical imaging technologies or facility management.

2 **Access to imaging facilities and imaging labs** of the applicant's choice to use biological and biomedical imaging technologies and related services.

3 **Hands-on training for researchers** with significant expertise in imaging and imaging facility professionals.

IMAGING 4 ALL
ADVANCING IMAGING SCIENCE GLOBALLY



I4A: Coordinated by Global BioImaging and funded by the Wellcome Trust.

*hosted by the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany

GLOBAL BIOIMAGING
growing collaboration

The first funding call under the i4A initiative received an enthusiastic response, reflecting the demand for equitable imaging access.

By the Numbers

- **Total applications received: 83** (Access Track: 36, Training Track: 25, Pro Track: 22)
- **Total awards granted: 40** (Access Track: 15, Training Track: 16, Pro Track: 9)
- **Participation spread: 85%** of host institutions were located in Europe, highlighting both the strong support from European imaging centers and the need for increased participation from hosts worldwide.
- **Geographical Reach:** Successful applicants from 18 different countries traveled to 14 different host countries. The world map below illustrates the movement of successful applicants, showcasing the global impact of the initiative. Arrows highlight the flow of knowledge and skills across the globe.

A Glimpse at the Vast Spread of Imaging

The awarded projects represent a wide range of scientific research fields and imaging techniques - from single molecule tracking of immunoreceptors to light sheet imaging of tissue regeneration-, demonstrating the broad applicability of the initiative.

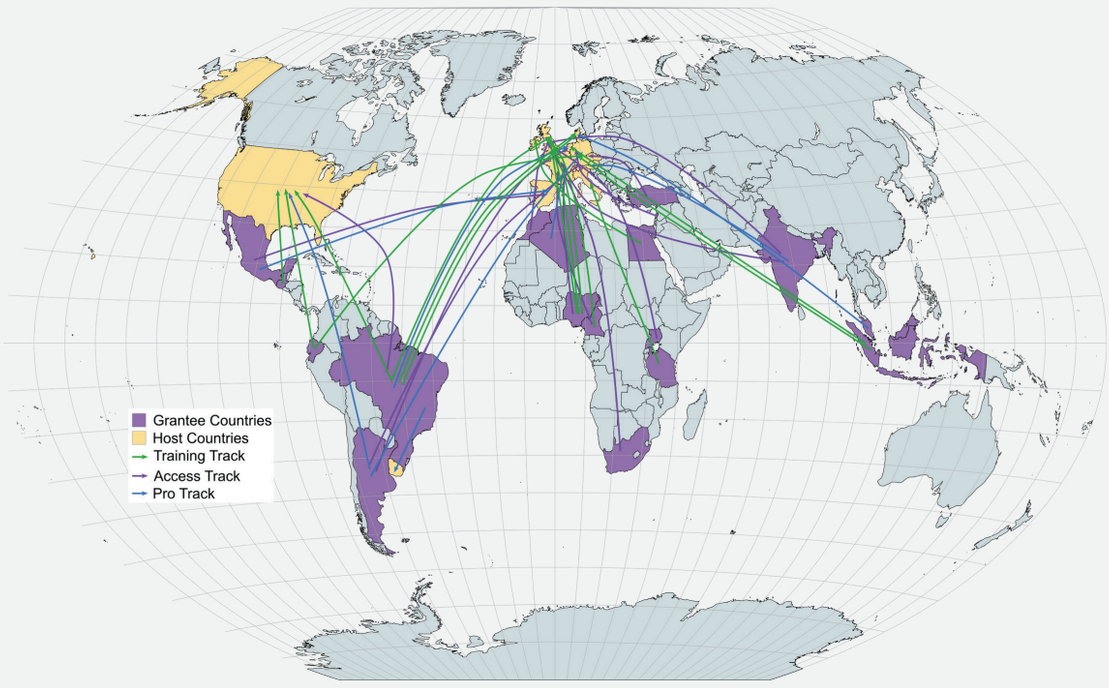
Looking Ahead: Expanding Impact and Sustainability

The success of the first call underscores the importance of continued investment in equitable imaging access. Moving forward, i4A aims to:

- Expand the network of host institutions to include more partners around the globe.
- Monitor long-term impact by assessing how knowledge transfer influences research output in applicants' home institutions in LMICs.

By fostering a globally inclusive imaging research ecosystem, Imaging 4 All is not just bridging technological gaps—it is empowering researchers, enhancing scientific innovation, and shaping a more equitable future in biological and biomedical imaging.

This article was written by Sophie Winter from Global BioImaging.



Movement of i4A grantees around the world to access instrumentation and training. The worldmap was created with mapchart.net.

IMAGING SOUTHEAST ASIA (ISEA):
A NEW REGIONAL NETWORK EMPOWERING BIOIMAGING SCIENTISTS

On January 24, 2025, a team of scientists and bioimaging leaders launched imaging Southeast Asia (iSEA), the first regional network dedicated to supporting researchers and healthcare professionals using imaging technologies across the ASEAN region.

Like other bioimaging networks and infrastructures around the world, iSEA aims to enhance access to advanced imaging technologies and expertise, bridge research infrastructure gaps, and drive higher-quality imaging, more reproducible data, and faster scientific discoveries.

“Unlike in Europe or North America, where bioimaging is well-established as a critical research field, in Southeast Asia, it is often seen as a supporting tool rather than a discipline in itself,” shared members of the inaugural committee.

This has made it challenging to secure funding and government support for imaging technologies, facilities, and professional development - elements crucial for driving research and innovation.

Southeast Asia's unique geographical challenges, including its many islands, multitude of languages, remote locations, and varying levels of imaging expertise across the scattered imaging infrastructures, highlight the need for a strong community.

With this in mind, Teng Leong Chew, Director for the Advanced Imaging Center at HHMI Janelia, Satoshi Ogawa, Associate Professor at Monash University Malaysia, and Graham Wright, Director of the Research Support Centre at Agency for Science, Technology and Research (A*STAR), joined forces. Along with the support of their colleagues and regional partners, they laid the foundation for iSEA, culminating in its recent launch.

“Much of the initial energy, enthusiasm, and effort [to form iSEA] was inspired by the work of communities connected to Global BioImaging, such as LABI, SABI, and ABIC,” said the team. These networks, established in comparable settings, have successfully built collaborative imaging landscapes where local challenges are addressed through shared solutions and strong community ties.

Several key events have played a vital role in iSEA’s formation and growth, including:

- The **Microscopy Technology Dissemination conference** at Janelia
- The **Okinawa Microscopy Workshop**, hosted by OIST and ABIS in Japan, which attracted imaging scientists from Southeast Asia.
- The first **Malaysia Advanced Imaging community meeting** in Kuala Lumpur, Malaysia.
- The **Global Bioimaging Facilities Management Course** in Singapore, hosted by SingaScope.
- The **Global Bioimaging Exchange of Experience 2024** in Okazaki, Japan.

Each of these events helped expand the network, strengthen connections, and build momentum.

Additionally, industry partnerships with microscopy and imaging technology companies have been instrumental for iSEA’s development and outreach, and their continued support will be pivotal in sustaining the network.

Looking ahead, iSEA is calling on imaging scientists and institutions across Southeast Asia to join its mission. Researchers can connect with iSEA through its website and social media platforms, engage with local community members, contribute to network activities, and learn about relevant initiatives timely such as Imaging4All. Plans are also underway for iSEA’s first dedicated event in Malaysia in late 2025, which will further strengthen regional collaboration and provide a platform for sharing expertise.

With a growing community and a shared vision, iSEA is set to transform the bioimaging landscape in Southeast Asia - fostering innovation, strengthening collaboration, and shaping the future of scientific discovery in the region.

Learn more about iSEA on their website (www.imagingsea.org), and connect on social media via LinkedIn and X.

This article was written by Sophie Winter from Global BioImaging.

Key moments leading up to the launch of iSEA, including the final online meeting of the inaugural committee, the Malaysia Advanced Imaging community meeting, and the Global BioImaging Facility Management Course in Singapore and Exchange of Experience conference in Japan.

Imaging scientists worldwide empower research and diagnostics, shaping science and society in scales beyond what is commonly recognized.
The impact of these scientists - working behind the scenes to enable access to imaging technologies locally and globally, advancing imaging technologies, and sharing their expertise through training and mentorship - remains largely unseen and under appreciated.

To bring their stories to light, members of Global BioImaging's working group "Societal Impact of Imaging Infrastructures" have been interviewing imaging scientists and compiling impact stories from around the world. These stories reveal how imaging infrastructures advance research, connect to the sustainable development goals, and create broader societal benefits.

For a glimpse into this work, see one of the articles on pages 25-27.

IMAGING SCIENTISTS HELP DRIVE DEVELOPMENT OF VACCINES AGAINST MOSQUITO-BORNE DISEASES

With continued support from imaging facilities, Australian researchers leverage cryo-electron microscopy to validate and drive the development of a new vaccine platform for mosquito-borne viruses like dengue and Zika.

This article was written by Sophie Winter, Global BioImaging and Jenny Whiting, Microscopy Australia.

Building on long-standing collaborations with Monash University imaging facilities, virologist A/Prof. Jody Hobson-Peters and her team at the University of Queensland have developed a groundbreaking vaccine platform to combat mosquito-borne flavivirus diseases—including dengue, yellow fever, Zika, West Nile, and Japanese encephalitis virus (JEV).

This new platform addresses major safety and manufacturing limitations found in existing vaccines. If successfully scaled, it could significantly reduce global health and economic burdens while contributing to several Sustainable Development Goals (SDGs, see below).

Rethinking Vaccines to address a Global Challenge

Mosquito-borne flaviviruses affect millions each year, posing severe health and economic risks in many parts of the world.

Traditional vaccines are typically created by weakening or inactivating dangerous viruses. While effective, this method is slow, costly, and carries safety concerns that complicate production and deployment.

To overcome these challenges, Hobson-Peters and her team turned to a new strategy using a virus they had discovered a few years earlier.

This Binjari virus is a flavivirus that only infects insects and poses no risk to humans. By replacing Binjari's surface proteins with those from harmful flaviviruses, the researchers created a hybrid virus—one that tricks the immune system into mounting a defense, but without the risk of actual infection.

This patented hybrid system acts like an "inverted Trojan horse": on the outside, it mimics dangerous viruses closely enough to stimulate a strong immune response; on the inside, it's harmless.
What's more, the surface can be easily modified, allowing the same platform to target multiple diseases. This innovation fills critical gaps in vaccine technology, offering a safe, adaptable, and scalable solution.

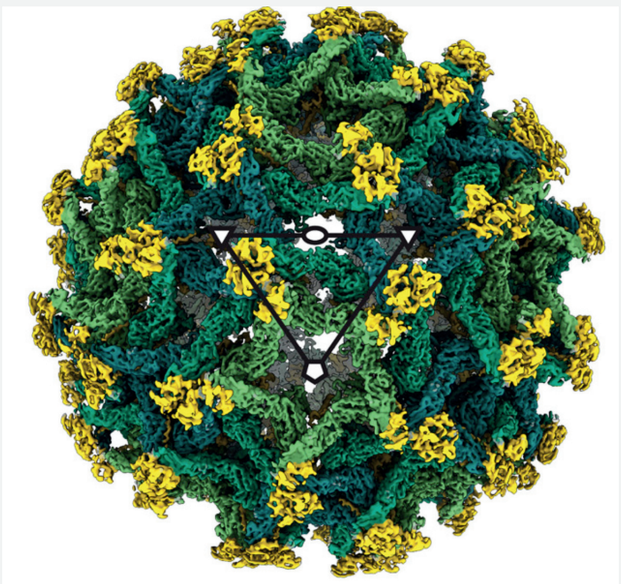


Image taken from: "The structure of an infectious immature flavivirus redefines viral architecture and maturation", https://doi.org/10.1126/sciadv.abe4507

The Critical Role of Imaging Expertise

Designing this hybrid vaccine required researchers to see the virus structure in extreme detail—something only cryo-electron microscopy (cryo-EM) can provide. This complex imaging method requires years of experience to produce clear, usable data.

That's where the collaboration with Monash University's Ramaciotti Centre for Cryo Electron Microscopy came in. Dr Hariprasad Venugopal, senior microscopist at the Centre, led the imaging experiments and ensured their scientific reliability.

> To achieve usable images, *"our main effort is to make sure that at the time of imaging, we achieve the best possible results both optically and in sample preparation—getting the cleanest ice, the best particle distribution, and enough virus particles in each image to properly analyze,"* said Dr Venugopal.
>
> *"We bring the high-end part—that is, the electron microscopy—and simplify it for people…all of those things go on in the background and help everyone."*

These contributions often go unseen but are crucial to scientific success. Years of accumulated knowledge from similar projects allow facility scientists to fine-tune each experiment, troubleshoot technical challenges, and adapt workflows to different biological systems.

Project Realization

The vaccine platform emerged through a highly collaborative effort backed by Australian government funding: including National Health and Medical Research Council (NHMRC) Grants (APP1164216, 2020–2023) of AU$1,043,871.49 (APP2004582, 2021–2024) of $1,149,487 and an Australian Research Council Grant (LP210301351, 2023–2027) of AU$969,141.

Teams led by A/Prof. Jody Hobson-Peters and Dr Daniel Watterson at the University of Queensland, alongside A/Prof. Fasséli Coulibaly at Monash University, used cryo-EM to validate the structural integrity of the Binjari-based vaccine particles. The expert technical work of platform scientists Dr Hariprasad Venugopal and Dr Lou Brillault was central to these achievements.

To accelerate impact, the team focused first on developing low-containment animal vaccines, which are faster to bring to market. This approach proved highly effective for Japanese encephalitis virus vaccines in pigs, with early trials showing remarkable success.

Key collaborators also include the Elizabeth Macarthur Agriculture Institute, QIMR Berghofer, Treidlia Biovet, the Centre for Crocodile Research, and PRI Farming all of which helped scale the project's real-world applications.

Project Outcomes and Impact

The hybrid vaccine platform has already delivered tangible results, including:

- **Protection against dengue, Zika, West Nile, and yellow fever** in mouse trials—laying the groundwork for future human vaccines.
- A **JEV vaccine for pigs** showing over 90% efficacy, helping to break the transmission cycle between pigs, mosquitos, and humans.
- A **West Nile virus vaccine for farmed crocodiles**, preventing skin lesions that cost the industry millions annually.
- Use of the hybrid virus particles in **rapid diagnostic tests** for flaviviral diseases.

Together, these outcomes support public health, enhance food security, and reduce economic losses. As mosquito-borne diseases continue to expand due to climate change, the platform offers a flexible, scalable tool for future challenges.

In A Nutshell

- Project Title: Vaccine technology supporting human and animal health
- Project Duration: Current funding 2020–2027 (ongoing collaborations)
- Key Resources Used: NHMRC and ARC Grants, Microscopy Australia's UQ and Monash facilities, interdisciplinary and industry collaborations.
- Impact: A transformative vaccine platform with applications in public health, agriculture, and diagnostics.

SDGs Addressed

- SDG 2: Zero Hunger – By improving animal health and agricultural output
- SDG 3: Good Health and Wellbeing – By developing vaccines for diseases of global significance
- SDG 13: Climate Action – By equipping society with tools to tackle climate-sensitive diseases

References/ further reading

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- MA News article and video Feb 27, 2024: "Vaccine technology to protect agribusiness", https://micro.org.au/news/vaccine-technology-to-protect-agribusiness/; interviewed for the video: Prof Roy Hall and Dr. Jessica Harrison

→ discovery of Binjari virus and use as vaccine

- MA News article "New lateral flow test for mosquito-borne flaviviruses"

GLOBAL BIOIMAGING JOINS FORCES WITH THE ROYAL MICROSCOPICAL SOCIETY TO CHAMPION RECOGNITION OF IMAGING SCIENTISTS

May, 2025- Global BioImaging (GBI) is proud to announce a strategic new partnership with the Royal Microscopical Society (RMS), marking an exciting milestone in our shared mission to strengthen the global imaging community. This collaboration brings together RMS's long-standing leadership in microscopy and GBI's worldwide network of imaging infrastructures and communities to empower imaging scientists and advance imaging science on a global scale.

Founded in 1839, RMS has been at the forefront of supporting innovation and excellence in imaging across fields like medicine, biology, and materials science. Together, GBI and RMS are launching joint initiatives to advocate for imaging professionals, expand global networks, and promote best practices across the field.

First Joint Action: Acknowledgement Guidelines Roll-Out

Our first major initiative together is the global dissemination of Acknowledgement Guidelines, developed by RMS and BioImaging UK.

These guidelines address a persistent and widespread issue in science: the under-recognition of imaging facility staff and imaging scientists in support roles. Imaging scientists are often indispensable to both research and diagnostics—contributing to experimental design, method development, sample preparation, data interpretation, teaching, and even manuscript writing.

Yet, despite their central role, they are too often left unacknowledged in scientific publications, or incorrectly omitted from authorship. This lack of visibility not only hinders their career progression and professional recognition, but also makes it harder to demonstrate the value of these roles to institutions, funders, and governments.

The Acknowledgement Guidelines were originally drafted by Natasha Stephens following discussions with the RMS EM-UKI community and transformed into a clear, accessible poster by a BioImagingUK working group, including Jemima Burden, Maddy Parsons, Jessica Valli, and Daniel Soong.

These resources provide a practical, standardized approach to ensure proper credit is given—and help strengthen the case for sustained investment in imaging infrastructure and staffing.

Global BioImaging's Commitment

The Global BioImaging community, including our 13 partner networks and infrastructures across the world, is fully aligned with this mission. We are actively working to translate the guidelines into multiple languages to ensure they reach and resonate with imaging professionals globally.
This marks the beginning of a worldwide campaign to promote better practices in acknowledgement and authorship, and to advocate for fair recognition of facility-based science.

Get Involved: Join the Campaign
We invite everyone in the imaging community to take part in this global effort. Here's how:

- Download the Acknowledgement Guidelines from our webpage: https://globalbioimaging.org/documents

Translations in 10 other languages including Chinese, Japanese, Bahasa Indonesia, Bahasa Malaysia, French, Spanish, Portuguese, Catalan, Greek, Arabic are already available on demand (contact us at globalbioimaging@gmail.com) and will be posted on our website soon.

- Print and display them prominently at your imaging facility (after reading the "How to Use.." guide)
- Spread the word!

Let's make recognition the rule—not the exception.

Imaging Facility Guidelines for Acknowledgement

1. **All publications** resulting from the use of instruments and support staff within the facility should **acknowledge the facility as a whole**, e.g. '*the authors gratefully acknowledge the [core facility name] for their support & assistance in this work*' and the facility should be **informed of the publication**.

2. **Specific grants** that have funded the facility instruments used for the work to be published must be acknowledged if the data was acquired during the active period of that grant. **Facility staff will advise users of such grant codes**.

3. **Assistance provided above the technical or routine level**, with any facility staff providing scientific input and expertise in experimental set-up, acquisition, analysis or writing, should be recognised through **co-authorship** on resulting publications. Please discuss authorship and acknowledgement with facility staff prior to manuscript submission.

Example scenarios:

Sample Preparation	Routine sample preparation following standard protocol.	Simple acknowledgement
	Development of new sample preparation protocols. Optimisation of existing protocols for specific samples.	Inclusion of specific facility member on author list
Image Acquisition	Training of users to acquire images themselves. Simple acquisition of raw data.	Simple acknowledgement
	Operational image acquisition with input and decisions dependent on expertise. Design or re-design of experimental conditions.	Inclusion of specific facility member on author list
Image Analysis	Recommendation of analysis software and tools. Basic data analysis help and advice.	Simple acknowledgement
	Constructive data analysis and interpretation. Creation of complex custom image analysis tools.	Inclusion of specific facility member on author list

Based on the publication policy compiled by Natasha Stephen, Plymouth Electron Microscopy Centre, after discussions with the RMS EM-UK community.

Thank You

A heartfelt thank you to our dedicated working group members and their chairs, the international trainers who share their expertise so generously, the fantastic bioimaging community worldwide, and we thank our funders, the Chan Zuckerberg Initiative and the Wellcome Trust.

Together, you make imaging possible —
across borders,
across disciplines,
across people.

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