

Meeting with Wiame Aissoug & Samira Benadda

The ***Imaging 4 All* program**, led by Global BioImaging, aims to promote access to advanced imaging technologies and foster the development of international scientific collaborations. The meeting between **Wiame Aissoug**, a PhD student in biotechnology, and **Samira Benadda**, head of the photon microscopy platform at IBENS, perfectly illustrates this dynamic. Through knowledge transfer, the exploration of new approaches, and the co-construction of projects, this exchange highlights the **central role of bioimaging** in bringing **scientific communities closer together** and in **developing new expertise**.

We met with Wiame and Samira, who kindly agreed to answer our questions to better understand the challenges and benefits of this exchange.

Can you briefly introduce yourselves?

[Wiame] I am a **biotechnology engineer and a PhD student** at the **Centre de Recherche en Biotechnologie (CRBt)** and the **Ecole Nationale Supérieure en Biotechnologie** in Algeria. Alongside my PhD, I am involved in the **development of a bioengineering platform dedicated to emerging technologies**, particularly **microfabrication** for lab-on-chip systems, 3D bioprinting, and advanced bioimaging. I am also **co-founder of the startup MIMIC-AL**, which aims to develop and disseminate these technologies.

[Samira] I am a **research engineer and head of the photon microscopy platform at IBENS**, and I have been working in this field for nearly 20 years. This extensive experience has allowed me to develop technical expertise that I have always been committed to sharing with the scientific community. **Knowledge transfer is at the core of my work**. For me, technical expertise only has value if it is shared. Today, as **co-coordinator of the Africa Hub of France-BioImaging**, I use this expertise to support international collaborations such as the *Imaging 4 All* program. For me, microscopy is above all a **tool for transmission** and openness, enabling the building of sustainable and equitable scientific bridges.

Wiame, what research project are you currently working on?

[Wiame] As part of my PhD, I am working on the **development of lab-on-chip devices** to study **gene editing under controlled conditions**. These devices allow me to analyze

cellular behavior using microfluidic systems and 3D models such as spheroids. This project aims to better **understand cellular dynamics** and to **evaluate the efficiency** of these systems in environments close to physiological conditions.

In parallel, on a professional level, I contribute to the structuring and development of the bioengineering platform, with a focus on lab-on-chip systems for **biotechnological applications**, as well as the **integration and optimization of imaging technologies**.

How did you experience the Imaging 4 All – Access Track program?

[Wiame] It was a very enriching experience, both technically and scientifically. I had **access to advanced imaging systems**, **tested different approaches**, and **exchanged with experts**. It also allowed me to **step back from our practices** and **identify areas for improvement** for our platform.

Samira, why is it important for you to host beneficiaries of this program?

[Samira] From the launch of *Imaging 4 All*, I wanted to get involved because it is a unique opportunity to **turn North–South equity into concrete action**. For me, reducing the technological gap means providing our African collaborators with **real access to the most advanced imaging technologies**.

But beyond the technical aspect, this hosting is essential because it creates valuable reciprocity: by **sharing our expertise** in microscopy, we receive in return **new scientific perspectives** and **different research challenges**. This peer-to-peer dialogue is what makes the strength of our Africa Hub within France-Biolmaging.

Why did you choose a France-Biolmaging platform?

[Wiame] France-Biolmaging brings together platforms recognized for their expertise in advanced imaging and scientific support. It was an ideal opportunity to **access technologies that we do not yet have** at our site, while benefiting from **strong technical guidance**, and to **integrate our platform into an active international network** aligned with our microscopy needs.

How did the platform benefit from this collaboration?

[Samira] Hosting beneficiaries of the *Imaging 4 All* program brings **concrete and immediate benefits** to the platform. On one hand, it pushes us, as engineers, **to refine our protocols and training methods** to better support external experts. It is an excellent opportunity for the team to **enhance its skills**. On the other hand, by integrating the Global BioImaging network, the platform strengthens its role in **global scientific equity**. This reinforces our **public service mission** and our **commitment to excellence in science, open to all**.

Wiame, how did this stay advance your project?

[Wiame] This stay allowed me to **test certain approaches** on samples related to my work, particularly in **advanced microscopy** and **expansion microscopy**. I also gained **solid foundations in metrology** and **microscope performance evaluation**, which is essential to ensure data quality. These skills are directly useful both for my PhD project and for the development of our platform.

How did this collaboration enrich your scientific approaches?

[Wiame] This collaboration mainly allowed me to **compare our approaches with those of a more specialized platform** and to receive concrete feedback on certain practices. Discussions with the teams helped me better **understand the limitations of some technologies** and identify areas for improvement in our platform.

[Samira] This meeting was a real scientific enrichment for us. It allowed us to **explore the topic of lab-on-chip systems**, a field that had not yet been developed at our site. Adapting our equipment to these miniaturized supports not only **diversified our technical expertise** but also **stimulated the evolution of our acquisition protocols**. Beyond the human exchange, this collaboration **enriched our scientific offering** by integrating new methodologies that could benefit our users.

How does Global BioImaging foster balanced collaborations?

[Samira] Global BioImaging fosters balanced collaborations by **transforming a technical relationship into a true partnership between peers**. While the platform provides access to advanced cutting-edge technologies, the visiting researcher enriches the host site with

innovative research themes. Our experience with the *Imaging 4 All* program perfectly illustrates this: the introduction of lab-on-chip research, previously absent from our site, stimulated the evolution of our scientific offering. This program ensures **mutual scientific recognition** and transforms short-term mobility into a **sustainable and equitable research collaboration**.

How do you see the future of this collaboration?

[Samira] The future of this collaboration looks very promising thanks to our selection in the **PiTCH Program of the AMI (Africa Microscopy Initiative)**. This program allows us to move from a one-time technical exchange to a **long-term educational partnership**. Our objective is to **co-develop a structured training module in bioimaging**. By becoming active members of the AMI network, we are no longer just sharing a technology; we aim to jointly establish a **local center of expertise** that will sustainably benefit the entire community of researchers in Africa.

Samira, as co-founder of the Africa Hub of FBI, how does this type of collaboration contribute to the Hub's missions?

[Samira] This project is at the very heart of our mission: **building concrete and sustainable bridges**. This collaboration demonstrates that our platforms are not only places of high technology, but also **hubs of international cooperation**. By moving from hosting Imaging 4 All participants to training PiTCH mentors within AMI, for example, we transform local expertise into a lever for autonomy for our African partners. Step by step, this is how we contribute to **building a more equitable scientific community**.