

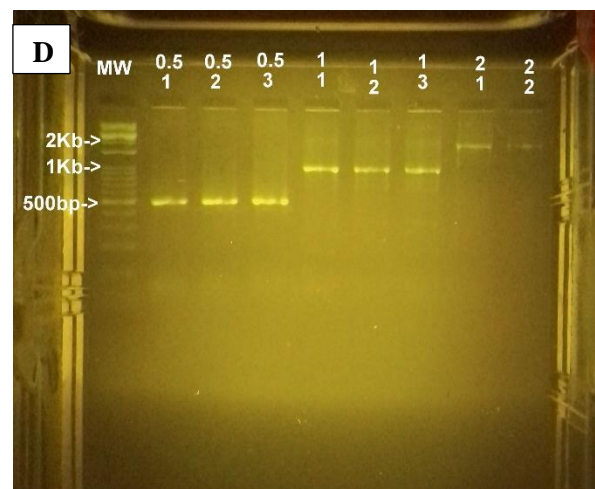
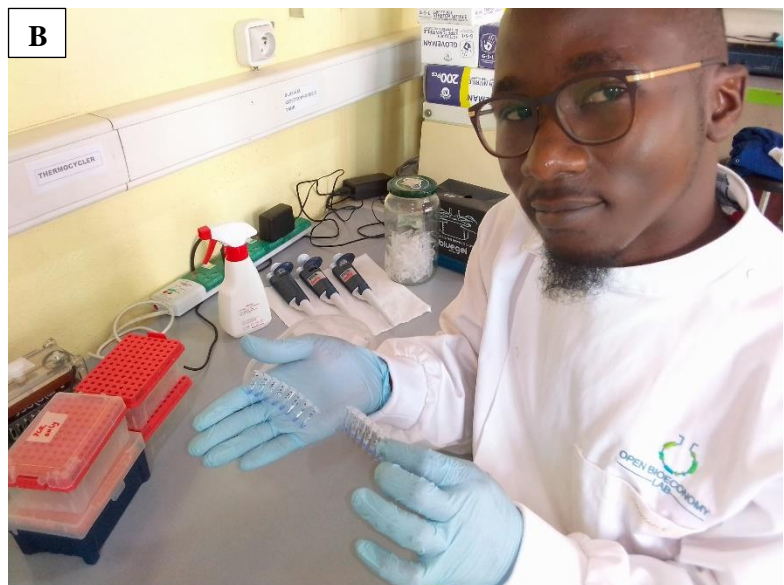
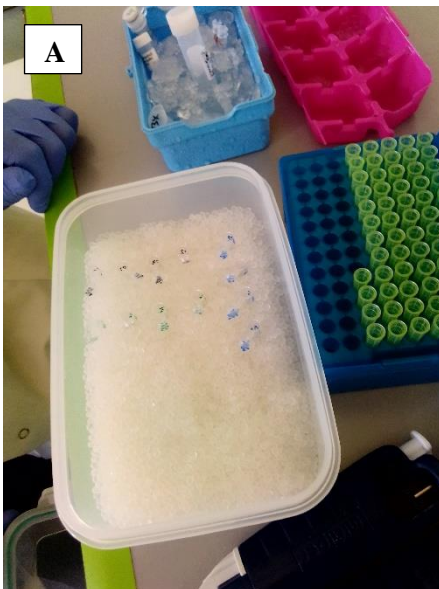


# MBOALAB

CATALYZE LOCAL SUSTAINABLE DEVELOPMENT  
THROUGH OPEN SCIENCE

Concept Note | 30/04/202

Mboalab is an open and collaborative space located in Yaoundé, Cameroon. Operating as a research and applied Center for Open Science and Citizen Science, Mboalab was officially opened in December 2017, with the objective to catalyze sustainable local development and improve people's living conditions through open science. Our main mission is to make biotechnology research and tools more accessible to laboratories in Cameroon and Africa. To achieve this goal, Mboalab is conducting Research & Development programs through its three main departments (1-Synthetic Biology; 2-Artificial Intelligence and electromechanics; 3 - Scholarly Communication and Library Science); As the pilot node of the UK-based Beneficial Bio network, we pioneered protein production in Cameroon and set up the first biomanufacturing and R&D unit to be founded in the country. We developed locally manufactured molecular biology reagents which are now made available to researchers, health innovators in the public and private sector as well as individuals in Cameroon through our commercial platform [Beneficial Bio](#).



**Development of Locally produced PCR master Mix.** [A]: Experiment setup; [B]: Stephane Fadanka holding freshly prepared Master Mix; [C]: Freshly prepared Master Mix; [D]: Control PCR using locally made Master Mix.

## Experience and Expertise:

### I- Cutting Edge Research:

Through our extensive network of international partners, we have been collaborating on high-level innovative research projects in the field of molecular Diagnostic and Synthetic Biology; Some examples include:

- **The RT-LAMP Project**, funded by Volkswagen Foundation, [Link: \(News | Vienna BioCenter\)](#) in collaboration with Cameroon Ministry of Defence (CRESAR) and the Centre for Research in Infectious Diseases (CRID) on the validation of an open-source RT-LAMP kit for covid 19 diagnostic.



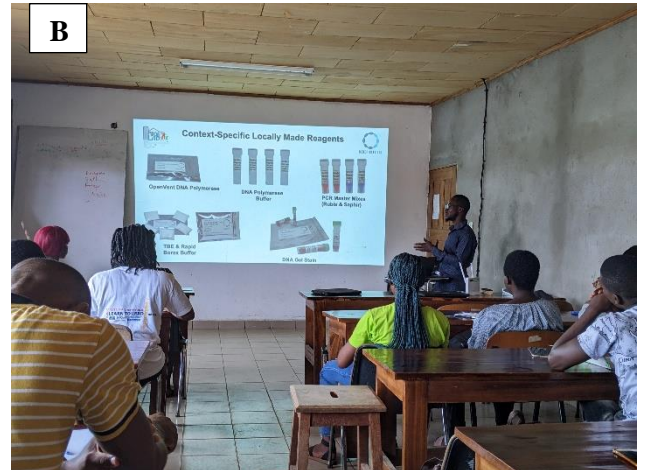
*Kick-off RT-LAMP Project meeting at CRESAR with all Cameroon project partners*

- **The CRISPR TyphoidDx project**, [Link: CRISPR TyphoidDx project](#) a GCRF-funded project addressing novel molecular diagnostics for typhoid fever. With this project, we contributed to the development of a proof-of-principle DNA-based assay that distinguishes *S. Typhi* from *S. Paratyphi*, which could be manufactured in Cameroon (using locally made Bst-LF and Cas12 enzyme) and with a reagent cost of <\$1 per reaction. Another important work initiated this year consists of broadening the scope of possible target pathogens to develop similar diagnostics for other infectious diseases. These use the same technology including *Streptococcus agalactiae*.

### II- Training

Mboalab is committed to developing open educational resources and simple and cost-effective protocols that can be applied in resource-limited settings. Another important activity revolves around capacity building for young scientists and local talents to develop researchers and local innovators – particularly women in STEM in the field of Molecular and Synthetic Biology, Engineering, and Data Science who can apply state-of-the-art technologies.

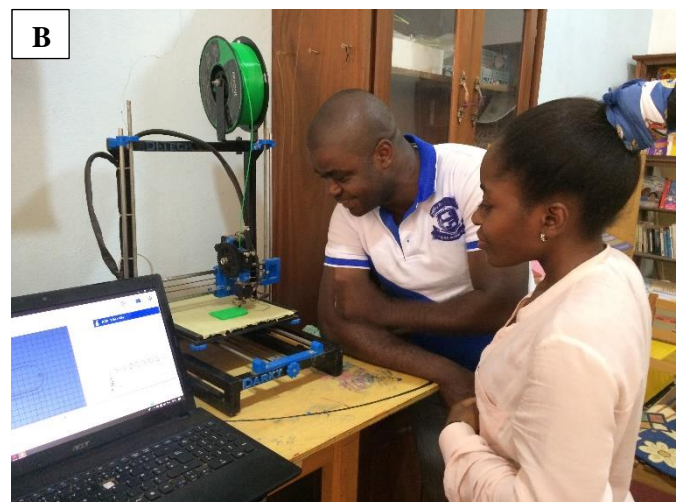
The objective is to achieve sustainable development goals for scientists within their local context and build enterprises that will generate employment. In February 2022 we officially inaugurated our [Biotech Innovation Hub: Link1; Link 2](#); a fully equipped lab unit available to local researchers and students. The space is dedicated to research, internships, and training. More recently, we achieved notable success with our CRISPR Dx Academy Roadshow. In March 2022, we held a series of training workshops carried out in the principal universities across the country. The activity revealed the tremendous interest and need for vulgarization of the benefits of recent discoveries in the field using advanced techniques such as CRISPR Cas12 in treating and diagnosing infectious diseases.



[A]: Official Inauguration, Bio-innovation Hub;  
 [B], [C], [D]: Training Workshop at the University of Buea.  
 [E]: Recent cohort of trainees (Ph.D. Students) at the Bio-innovation Hub

### III- Engineering and Digital Innovation

Mboalab also hosts a department of Electromechanics and artificial intelligence, actively collaborating on various projects locally and internationally, Main activities involve local hardware prototyping ([Shaker incubator](#); [Microbiology incubator](#)); Development of opensource Artificial Intelligence (AI) algorithms and programs to improve diagnostics of local health issues ([Breast-Cancer-Diagnostics](#); [Improve diagnostics of typhoid](#)). At Mboalab, we wholeheartedly believe in the power of knowledge sharing and the importance of empowering the local population. We are committed to making a positive impact by providing training and capacity-building activities that equip individuals with the skills and tools they need to thrive. Through our dedicated efforts, we aim to create a sustainable and inclusive environment where everyone has equal opportunities for growth and development. Our dedication to sharing knowledge and empowering the local population is driven by the belief that sustainable development is best achieved when everyone is equipped with the tools and skills they need to succeed. We strive to create a collaborative and inclusive environment where individuals can thrive and contribute to the overall growth and well-being of their communities.



*[A]: Inspiration Workshop with High School Students;*

*[B]: 3D Printing Workshop.*

*[C]: OpenFlexure Workshop*

The work at Mboalab has been featured in prestigious and leading publications platforms and journals such as Nature, Stanford news, Current protocol;

- [How junior scientists can land a seat at the leadership table \(nature.com\)](#)
- [How DIY technologies are democratizing science \(nature.com\)](#)
- [Enzyme toolkit makes biotechnology globally accessible | Stanford News](#)
- [Preparation and use of cellular reagents: a low-resource molecular biology reagent platform](#)
- [Producing molecular biology reagents without purification | PLOS ONE](#)

The team at Mboalab Biotech includes full fledge researchers and professionals including African representatives and advisors in African and International institutions. We welcome any feedback or questions you may have and look forward to the opportunity to further discuss this concept and explore potential avenues for collaboration. Thank you for considering our proposal.

**Contact:**

- Email: [mboalab@gmail.com](mailto:mboalab@gmail.com)
- Website: <https://mboalab.net/>
- GitHub pages : <https://github.com/Mboalab>, <https://github.com/jafsia>
- Twitter: @Labmboa
- LinkedIn: <https://www.linkedin.com/company/mboalab/mycompany/?viewAsMember=true>

# Thank you!

