Laboratoire Génomique Pathogènes | Institut National Recherche Biomédicale

NEWSLETTER

004/25

April 2025



A word from the Laboratory Manager

"Dear colleagues,
The month of April was marked by positive dynamics within the Pathogen Genomics Laboratory (PGL).
We continue our efforts both nationally and internationally, through genomic surveillance activities, technical training, and strengthening the quality system, all of which reflect our collective commitment to responding to public health emergencies with quality in service of research and innovation.
I would like to thank the entire team for their diligence, commitment, and professionalism. Let us continue working together to make the PGL a scientific reference on the continent."

Amuri Aziza Adrienne

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MONTHLY HIGHLIGHTS

INRB participation in the ANRS MIE 2025 Scientific Days



The Pathogen Genomics Laboratory (PGL) of INRB participated from April 1 to 2, 2025, in the Scientific Days of ANRS Emerging Infectious Diseases (ANRS MIE) at the Institut Pasteur in Paris.

For the second consecutive year, this event was preceded on March 31 by a day entirely dedicated to the Start network, which serves as a dynamic space for dialogue and the promotion of young research talents.

During the ANRS MIE Scientific Days, Professor Eddy Kinganda Lusamaki from the Pathogen Genomics Laboratory of INRB presented the role of genomics in combating outbreaks such as Ebola, COVID-19, and Mpox in the DRC.

Since 2018, sequencing has allowed for the rapid confirmation of outbreaks and the adaptation of response strategies.
Recent work on Mpox has revealed the complexity of the Mpox outbreak in the DRC, with several transmission paradigms. In Kinshasa, the capital, multiple variants are co-circulating.

Therefore, the response should adapt to the nature of the outbreaks while integrating the socio-humanitarian context in which they emerge. Genomics thus appears as an essential tool to understand, anticipate, and better control outbreaks in the DRC.

Biosafety and biosecurity capacity building for INRB's Pathogen Genomics Laboratory staff



As part of the continuous skill development within the Pathogen Genomics Laboratory (PGL) of the Institut National de Recherche Biomédicale (INRB), a practical training on biosafety and biosecurity was held in March 2025, facilitated by the INRB Biosafety Manager.

This session was organized in three stages, targeting successively the bench team, the Biobank, and then the bioinformatics team. Through dynamic exchanges and practical exercises, participants were sensitized to essential measures to prevent biological incidents and strengthen the safety culture within their workspaces.

The official certificate ceremony took place on April 17, 2025, in the presence of Professor Placide Mbala, Head of the Department of Epidemiology and Global Health.

On this occasion, the Professor warmly congratulated the participants and urged them to apply the best practices they had learned, not only at INRB but also in their future collaborations and professional environments.

Acquisition of two UV robots to boost disinfection at the Laboratory



The Pathogen Genomics Laboratory of INRB now has two UV-C disinfection robots, acquired through the Afroscreen project.

These new technological tools enable the decontamination of workspaces, as well as genetic materials from viruses, bacteria, or fungi present in the air.

They complement traditional decontamination methods by enhancing team safety and ensuring more accurate results.

Mpox seminar at ITM Antwerp - Review of the event



On April 18, 2025, Professor Placide Mbala, Head of the Department of Epidemiology and Global Health at INRB, led a scientific seminar on the challenges of integrating disease prevention and control methods, focusing on the case of Mpox in the Democratic Republic of the Congo.

The event, organized by the Institute of Tropical Medicine (ITM) Antwerp, brought together numerous experts both in person and online to discuss issues related to surveillance, response, and global health.

SCIENTIFIC ZOOM



Mpox Clade Ia: A fatal case in Kwango likely linked to a sexual transmission network in Kinshasa

Researchers from the Institut National de Recherche Biomédicale (INRB), in collaboration with several international partners, have documented for the first time a possible sexual transmission of the Mpox Clade Ia virus in Kwango, in a sex worker who had stayed in Kinshasa a few weeks earlier.

Historically limited to zoonotic transmission in rural areas, this clade now shows signs of adaptation to humans and is actively circulating in urban environments. This discovery marks a significant turning point in understanding the epidemiological dynamics of Mpox in the DRC.

The study, published in the scientific journal *Emerging Infectious Diseases* (CDC), is based on advanced genomic analyses that reveal characteristic mutations associated with a prolonged chain of human-to-human transmission. In light of this evolution of the virus, INRB calls for strengthened surveillance, particularly in densely populated areas.

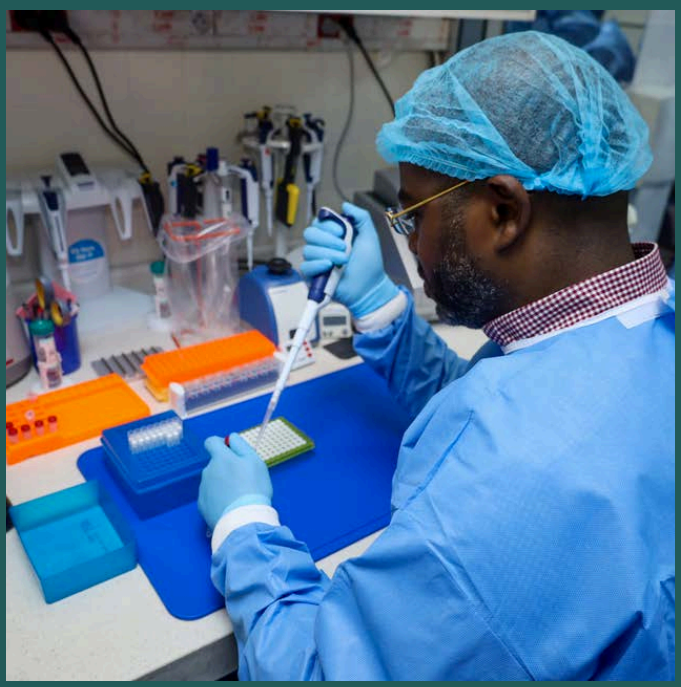
🔗 Read the full article here:
https://www.sciencedirect.com/science/article/abs/pii/S0166093425000473?via%3Dihub

Mpox-related ocular complications: a retrospective study in Kole, DRC

A new study, conducted in collaboration with several international teams and coordinated by Professor Placide Mbala-Kingebeni, Head of the Department of Epidemiology and Global Health at INRB, has been published on medRxiv. The study highlights a lesser-documented aspect of Mpox complications: ocular involvement.

Conducted on a cohort of 216 patients in the Democratic Republic of Congo between 2007 and 2011, the research reveals that 8.3% of patients infected with the Mpox Clade I virus experienced ocular complications, ranging from conjunctivitis to severe keratitis, as well as eye pain, eyelid lesions, and one case of corneal staphyloma.

These findings emphasize the importance of rigorous ophthalmological monitoring for Mpox patients, particularly in endemic areas. The study also reminds us that, while rare, these manifestations can severely compromise vision if not addressed promptly.



🔗 Read the full article here:
https://www.medrxiv.org/content/10.1101/2025.04.07.25325069v1



EDDY KINGANDA LUSAMAKI, MD, PHD

He is a senior physician and researcher at the Institut National de Recherche Biomédicale (INRB), where he plays a key role in the surveillance and research of infectious diseases. He is currently responsible for the Biobank and is part of the leadership team at the Pathogen Genomics Laboratory at INRB.

At the intersection of clinical medicine, molecular biology, and bioinformatics, he specializes in next-generation sequencing technologies (Illumina, Oxford Nanopore) and advanced genomic data analysis. His expertise is regularly sought after in major outbreak responses in the DRC, including outbreaks of Ebola, COVID-19, Chikungunya, and Mpox.

Dr. Kinganda Lusamaki holds a PhD from the University of Montpellier and is currently a postdoctoral fellow at the TransVIHMI unit (IRD, France). He has also benefited from numerous international training programs (France, South Africa, Germany, Burkina Faso) in the fields of epidemiology, statistics, molecular biology, bioinformatics and phylogenetic analyses, and biological risk management in laboratories.

In addition to his research work, Dr. Kinganda is a recognized trainer, actively involved in strengthening laboratory capacity in Central Africa.

Selected scientific publications :

- *Clade I mpox virus genomic diversity in the Democratic Republic of the Congo, 2018–2024.***Cell**, 2025 – https://doi.org/10.1016/j.cell.2024.10.017
- Integration of genomic sequencing into the response to the Ebola virus outbreak in Nord Kivu, Democratic Republic of the Congo- Naturemedecine, 2021 https://www.nature.com/articles/s41591-021-01302-z
- *2020 Ebola virus disease outbreak in Équateur Province, Democratic Republic of the Congo: a retrospective genomic characterisation*. **The Lancet** Microbe, 2024 – https://doi.org/10.1016/S2666-5247(23)00259-8
- *Sustained human outbreak of a new MPXV clade I lineage in eastern DRC*. **Nature Medicine**, 2024 – https://doi.org/10.1038/s41591-024-03130-3
- *Co-circulation of monkeypox virus subclades Ia and Ib in Kinshasa Province, DRC, July to August 2024*. **Eurosurveillance**, 2024 – https://doi.org/10.2807/1560-7917.ES.2024.29.38.2400592

APRIL IN PICTURES



Washing Mpox amplicons



Certificate awarded at the end of the ISO 20387 training course in Nairobi April 2025



Preparing the library for Mpox virus sequencing



Closing of training course on Performance evaluation of Mpox REVITAL CADY® and ContiPharma® antigenic rapid diagnostic tests



Lab team after analysis and sequencing of Mpox samples



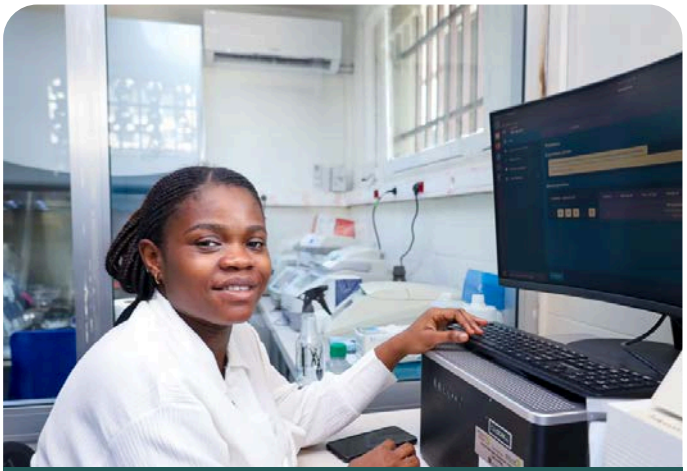
Lab decontamination by UV robot



Family photo at the Mpox seminar organized by ITM-Anvers



Family photo at the launch of the Mbote Epic project



Launch run Mpox (monitoring)

PUBLICATIONS : January 01 to April 17, 2025

1.Tecovirimat for Clade I MPXV Infection in the Democratic Republic of Congo-NEJM6-(Avril 2025)- https://www.nejm.org/doi/10.1056/NEJMoa2412439

2. Clinical presentation and epidemiological assessment of confirmed human mpox cases in DR Congo: a surveillance-based observational study- The Lancet(Avril 2025). https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(25)00152-7/abstract

3. Comparison of EBOV GP IgG Antibody Reactivity: Results from Two Immunoassays in the Democratic Republic of the Congo- Journal of Virological Methods (avril 2025) https://www.sciencedirect.com/science/article/abs/pii/S0166093425000473?via%3Dihub

4.Public health priorities for mpox clade Ib in pregnant, breastfeeding, and paediatric populations in DR Congo- The Lancet (Avril 2025)-https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(25)00152-5/abstract

5. Epidemiological and clinical features of mpox during the clade Ib outbreak in South Kivu, Democratic Republic of the Congo: a prospective cohort study - The Lancet (2025) https://www.sciencedirect.com/science/article/abs/pii/S0140673625000479

6. Clade I mpox virus genomic diversity in the Democratic Republic of the Congo, 2018–2024: Predominance of zoonotic transmission - Cell (mars 2025)https://www.cell.com/cell/fulltext/S0092-8674(24)01199-1?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0092867424011991%3Fshowall%3Dtrue

7. Establishment of a regional Mpox surveillance network in Central Africa: shared experiences in an endemic region - Global Health Research and Policy (Mars 2025) https://ghrp.biomedcentral.com/articles/10.1186/s41256-025-00408-y

8. Suspected and confirmed mpox cases in DR Congo: a retrospective analysis of national epidemiological and laboratory surveillance data, 2010–23 - The Lancet (février 2025) https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(24)02669-2/abstract

9. Evolving Epidemiology of Mpox in Africa in 2024 - The New England Journal of Medicine (février 2025) https://www.nejm.org/doi/full/10.1056/NEJMoa2411368

10. Concurrent outbreaks of mpox in Africa—an update - The Lancet (janvier 2025) https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(24)02353-5/abstract

Dear partners, Thank you for your commitment!

Editorial team

Joelle BOTAMBA
Magloire VAKANIAKI
Gradi LUAKANDA

Layout & Design

Joelle BOTAMBA

Laboratoire de Génomique des Pathogènes - INRB

@labgenpath

@labgenpath.bsky.social

Pathogen Genomics Laboratory

www.inrb.cd

+243822851584
+243896729720

labgenpath@inrb.cd

Av. De la Démocratie N°5345,
(Ex Av. Des huileries), Kinshasa - Gombe.