AFROSCREEN

Sequencing capacity-building in Africa

2021
2024

3 YEARS OF ACTION to strengthen genomic sequencing capacity in Africa

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What is the AFROSCREEN project?

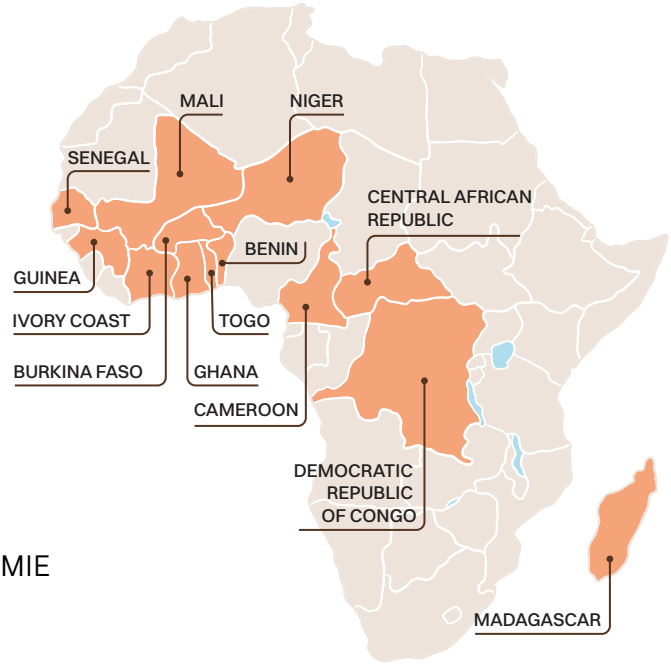
Between 2021 and 2024, the AFROSCREEN project project was implemented with the aim of strengthening sequencing capacity in 13 African countries for genomic surveillance of SARS-CoV-2 and other emerging pathogens with high epidemic potential, while integrating into national health systems.

10 million euros

Funded by the Agence française de développement (AFD)

THE AFROSCREEN NETWORK

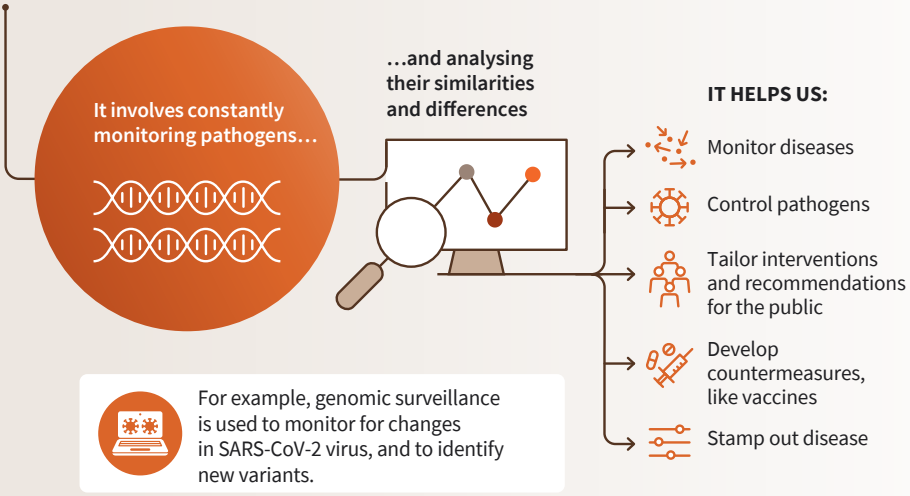
- 21 laboratories and 8 partner scientific institutions across 13 countries in West Africa, Central Africa and Madagascar
- Collaboration with national health authorities, Africa CDC and WHO
- Coordination by ANRS MIE in partnership with IRD and Institut Pasteur



Africa CDC: Africa Centres for Disease Control and Prevention; ANRS MIE: ANRS Emerging Infectious Diseases; IRD: French National Research Institute for Sustainable Development; WHO: World Health Organisation.

What is genomic surveillance?

Genomic surveillance is monitoring the genetic makeup of pathogens, such as viruses and bacteria, to understand how they behave and how we can control them.



Source: *Media toolkit*, by WHO.

SPECIFIC OBJECTIVES OF THE AFROSCREEN PROJECT

Strengthen sequencing capacity through training, equipment procurement and on-site technical support.

Alert health authorities and the international community through continuous surveillance.

Detect and **characterise** emerging variants and monitor their spread.

Prepare partner countries to better respond to future epidemics, and strengthen responses to health crises.

AFROSCREEN: capacity building

EQUIPMENT TO STRENGTHEN TECHNICAL LABORATORY CAPACITIES

At the launch of the project in 2021, only 3 out of 21 laboratories (14%) had complete equipment to conduct large-scale genomic surveillance.

100%

of laboratories equipped for screening and sequencing at the end of the project in 2024

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The equipment and skills established during the Covid-19 pandemic, at the beginning of the project, enabled participating countries to combat new health threats such as: **Marburg virus disease, mpox, hepatitis E, Ebola, measles, Lassa fever, influenza, chikungunya and dengue.**

RAINING TO STRENGTHEN STAFF SKILLS

> 80 **training courses held between 2021 and 2024, including:**

15 epidemiology training courses (monitoring viral circulation)

20 bioinformatics training sessions (comparison of viral sequences)

32 training courses on **sequencing** of SARS-CoV-2 and other (re)emerging viruses (accurate virus identification)

14 training courses on SARS-CoV-2 **screening PCR tests** (detection of known mutations)

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In addition to practical training on laboratory protocols, sessions also addressed the One Health dimension and the social challenges linked to epidemics.

AFROSCREEN: data supporting public health

DATA MANAGEMENT AND SHARING FOR IMPROVED INTERNATIONAL COLLABORATION

Between 2021 and 2022, at the beginning of the AFROSCREEN project, the number of sequences shared on an international data platform increased from approximately **185 sequences** per 10,000 Covid-19 cases (across all laboratories in partner countries) to more than **750 sequences**, including **535** generated by AFROSCREEN network laboratories.

Sequence submission multiplied by four

Number of sentinel sites multiplied by eight

EPIDEMIOLOGICAL SURVEYS TO MONITOR INFECTIONS AND ANALYSE TRENDS OF VARIANTS

The AFROSCREEN network increased the number of sentinel sites for surveillance of severe acute respiratory infections (SARI) from **7 to 57** in **11 countries**.
These sites enable sample collection for sequencing and weekly data collection (age group, sex, vaccination status).

SCIENTIFIC IMPACT

25

Scientific publications
in international journals by AFROSCREEN network partners thanks to the project's support.

Focus on the detection of Omicron and mpox

Increased sequencing and genomic surveillance capacity enabled:

- Early detection of the **Omicron** variant in several African countries,
- Discovery in 2024 of **a new Ib clade of mpox** in the Democratic Republic of Congo[1] and the identification of two transmission modes:
  – **Human-to-human** transmission associated with sexual contact with the new Ib clade in urban areas
  – **Predominantly zoonotic transmission** in forest areas where the disease is traditionally endemic[2].

1. Vakaniaki *et al. Nature Medicine* 2024. https://doi.org/10.1038/s41591-024-03130-3
2. Kinganda-Lusamaki *et al. Cell* 2024. https://doi.org/10.1016/j.cell.2024.10.017

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www.afroscreen.org

The activities of the AFROSCREEN project were implemented in coordination with the health authorities of partner countries to ensure proper integration into national health policies. The first phase of the project, now completed, has enabled the establishment of a sustainable network of partners.

AFROSCREEN regional conference, May 2024 in Dakar

IMPLEMENTATION

ARCAD Santé Plus
Biolim
Centre Hospitalier National DALAL JAMM
Centre Hospitalier Universitaire Yalgado Ouédraogo CHUYO
Centre Hospitalier Universitaire du Point G
CHU EPHN-T
Centre MURAZ Recherche - Formation - Expertise
Centre Pasteur du Cameroun
CERFIG
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NRB
INSP
INSP
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Institut Pasteur de Côte d'Ivoire
INSTITUT PASTEUR de Dakar PASTEUR NETWORK
INSTITUT PASTEUR de Guinée PASTEUR NETWORK
INSTITUT PASTEUR de Madagascar PASTEUR NETWORK
IRCB
NOGUCHI
PACI
WACBIP

FUNDING

France
AFD

COORDINATION

anrs MALADIES INFECTIEUSES EMERGENTES Inserm
IRD Déployer la recherche Partager la science Transformer l'avenir
INSTITUT Pasteur