High-tech lab aids testing for monkeypox, other diseases

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Oligonucleotide synthesizer.Mfomich, CC BY-SA 3.0, via Wikimedia Commons

Nigeria's Oligo synthesizer laboratory, the first in West Africa, could be a game changer in tackling emerging and re-emerging diseases in the region if harnessed to its full potential, laboratory scientists have said.

Oligo synthesizer is used by scientists to design and develop primers, which are shorter versions of genes and can be used for testing diseases

within 24 hours.

Experts say the Oligo synthesizer which is available at the Nigerian Institute of Medical Research (NIMR) in Lagos could boost West Africa's ability to diagnose diseases such as monkeypox in the region.

"Unlike when we were at the mercy of Western countries to access advanced technology and laboratories, Nigeria can now diagnose all mystery diseases locally and in a very timely fashion," says Ayorinde James, a research fellow at the NIMR.

James adds that there are laboratories in West Africa that can rapidly identify the genetic makeup of disease-causing organisms but none has an Oligo synthesizer which can be used to make test kits. The machine in Nigeria is already impacting and saving lives, he says.

"We were able to save the life of a child a few weeks ago, who had a bone marrow transplant outside the country," James tells SciDev.Net. "The child became ill when he came back to Nigeria."

"His doctor abroad wanted to find out which virus was affecting the child. In less than 24 hours, we were able to provide information on what the problems were, which enabled the doctor to make an informed decision to save his life.

"If we were to send his sample abroad, which takes two to three weeks before we can get the result, the boy won't have survived. This is just one of the game-changing effects of the machine."

Bamidele Abiodun Iwalokun, head of the Molecular Biology and Biotechnology Division at the NIMR, says that it costs less than N5,000 (about US$12) to use the Oligo synthesizer machine to diagnose diseases.

James says Nigeria's Oligo synthesizer was launched in 2021 but fully commenced operation in May 2022. He said the MTN Foundation spent about 100 million naira (about US$233,000) to help set up the laboratory .

"Within a short period of time, we have been able to carry out a lot of experiments," James tells SciDev.Net. "My colleagues are currently working on human leukocyte antigen (HLA) typing for bone marrow transplant and breast cancer sequencing."

HLA typing is a type of genetic test conducted to examine factors that impact the body's immune system, which fights diseases.

James says that because the NIMR collaborates with medical institutions in Africa, the laboratory is available for use by African scientists to help control diseases.

Manason Rubainu, the director of Nigeria-based Peak Medical Laboratories Limited and a fellow of the West African Postgraduate College of Medical Laboratory Science, asks the NIMR to ensure that scientists in the region know about the laboratory and foster more collaboration for its maximum use.

Chinonso Egemba, executive director of the Nigeria-based 100K Club and a global health advocate, tells SciDev.Net that the laboratory is a welcome development but more work is needed to ensure that laboratory-based diagnosis is available in rural areas.

James agrees that acquiring the machine is just the start. "We need to keep investing, getting more accessories, to improve the quality of what we are doing. There is a need for expansion," he adds.