



*Groundbreaking collaboration underway, thanks to you...*

## **In Nigeria, teaming up to find the scientific explanation for an unusually high number of twins**

**I**t might be the okra leaves. Or the yams ... or maybe the cassava? It could also be genetic.

No one knows why Igbo-Ora, Nigeria—nicknamed “Twin Town”—has one of the **world’s highest rates of twin births**.

Years ago, two Nigerian scientists dreamed of joining their scientific expertises to search for answers, but their hands were tied without the right equipment... until they each received an Instrumental Access award.

Because of your support, they are now pursuing this work—which could have the potential to **unlock new avenues of research and treatments for infertility!**

These two Instrumental Access awards are enabling the joint investigation of environmental and genetic factors that could explain the **extremely high rate of non-identical twins** (commonly called dizygotic, or DZ, twins) born to Yoruba families in the region surrounding Igbo-Ora.

## Groundbreaking collaboration in Nigeria ... continued



Yams are a staple crop in Western Africa. Because of their prominence in the diet of people living around Igbo-Ora, Nigeria, researchers have hypothesized that they may be implicated in the area's unusually high rate of non-identical twins.

*Photo courtesy of the International Institute of Tropical Agriculture.*

### Pairing up for new research

Dr. Akhere Omonkhua (*right*), professor of medical biochemistry at the University of Benin in Nigeria, is a DZ twin herself.



To gain clues to dietary factors that might explain the high DZ twinning rate, she first surveyed the food traditions and beliefs of the Igbo-Ora community members. She theorizes that it could be the **high consumption of cassava and yams**.

Yams and cassava naturally contain compounds called *phytoestrogens*. Many phytoestrogens are known endocrine disruptors, which could impact a woman's ovulation—and therefore be implicated in twinning.

To date, the most-cited resources for this twinning phenomenon are from Patrick Nylander, a British gynecologist who studied twinning rates in the 1970s and 1980s.

But **previous approaches didn't harness the power of molecular biology**, explains Prof. Roseangela Nwuba of the University of Medical Sciences, Ondo.

Rather, they focused on recording and analyzing vital statistics, work that Drs. Nwuba (*right*) and Omonkhua are now building upon.



Prof. Nwuba specializes in molecular and cellular parasitology. She is investigating the phenomena with a lens toward genetic influences. She theorizes that a **combination of underlying genetics and epigenetic changes caused by diet** could be responsible for the twinning.

Now, with your support, these two Nigerian women are **leading the rigorous scientific work that previous investigators did not**.

**Pictured on the cover:** Professor Akhere Omonkhua attends the World Twins Festival with her twin sister, Dr. Odion Omonkhua.

Your support ensures that Prof. Akhere Omonkhua and Prof. Roseangela Nwuba are now equipped to carry out the research that they discussed years ago: unraveling the links between diet, genetics, and the unusually high rate of twins in Igbo-Ora, Nigeria.

*Photo courtesy Prof. Akhere Omonkhua.*

Drs. Nwuba's and Omonkhua's **labs are both well-equipped to meet this challenge**, thanks to equipment from Instrumental Access.

Powered by a \$100,000, 3-year grant from the Nigerian government, they are hoping to answer questions that have the potential to lead to **new, personalized medicines for reproductive health**.

“If a dietary factor is responsible [for DZ twinning] and we could isolate and characterize it, this could become very **important in regulating fertility or treating infertility**,” says Dr. Omonkhua.

## When the tools match the talent

Thanks to your support, these two scientists have the right tools to see their research flourish.

In fact, the Instrumental Access awards allowed them to secure exactly the equipment they needed for this collaborative study. And their work has the potential to provide insight into **new, cost-effective treatments for infertility**.

Dr. Omonkhua hopes this research collaboration will eventually yield “cheap and **easily accessible options for millions** of Nigerians



The twinning research team meets with community leaders in Southwest Nigeria.  
*Photo courtesy Prof. Roseangela Nwuba.*



Mothers of twins attend the World Twins Festival in Igbo-Ora, Nigeria, nicknamed “Twin Town” because it has one of the highest rates of DZ twins in the world.

With your support, Professors Akhere Omonkhua and Roseangela Nwuba are collaborating on research to understand the scientific explanation for the unusually high rates of twins in Igbo-Ora.

*Photo courtesy Prof. Roseangela Nwuba.*

who cannot afford the prohibitive cost of assisted reproductive technologies.”

Without you, these talented scientists could not build on the earlier statistical work. Your critical support allowed them to **move into the lab to understand the biology** behind Igbo-Oro's unusually high rates of twinning.

But **your investment does more** than supply equipment to solve this particular mystery...

Strengthening the scientific infrastructure in Nigeria is enabling these researchers and their students—the next generation of scientists—to follow their curiosity and **address urgent issues with local and global relevance**.

You helped **foster scientific collaboration that was not previously possible**. *Thank you!* 🍀



**Thank you for your generosity and support!** To empower even more scientists like Drs. Omonkhua and Nwuba, please visit [donate.seedingslabs.org](https://donate.seedingslabs.org).



*You're making a lasting impact worldwide!*

## Promoting equity across the global scientific community, thanks to your support

Your impact has been felt in **36 countries and counting** ... and we'd like to show you just what that looks like! Across the Instrumental Access program, we are focused on outcomes in three areas:

### Stronger, Robust Research

Instrumental Access equipment **enables and accelerates research**, resulting in innovative evidence-based solutions to development challenges across **health, food systems, energy, the environment**, and many other areas.

### Enhanced STEM Education

Equipment facilitates more student enrollment, increased hands-on practical teaching, new and expanded postgraduate programs, and **graduates better prepared to enter the STEM workforce** in roles critical to development goals.

### Sustainable Scientific Institutions

Equipment allows institutions to leverage funding and resources, **making the scientific ecosystem self-sustaining** with new research centers, improved student and staff retention, and opportunities for equitable global collaborations.

**Because of the new research lab we were able to develop with this equipment, we qualified to begin both Master's and PhD programs. And for that, we are very thankful.**

—Dr. Dativa Shilla, Instrumental Access awardee at the Dar es Salaam University College of Education in Tanzania



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