



2014 AWARD Fellow
Binta Iiyasu

Position	Principal Research Officer
Institution	Nigerian Institute for Trypanosomiasis Research
Country	Nigeria
MSc	Biochemistry, Ahmadu Bello University (ABU) Nigeria, 2000
Mentor	Dr. Sodangi Abdulkarim Luka, Associate Professor Department of Biological Sciences, ABU
Research Area	Use of advances in biotechnology for the development of a DNA vaccine against African trypanosomiasis to reduce economic losses.

“Trypanosomiasis now exists in places that were known to be free of the disease, due in part to migration, environmental factors, and political instability that create movement of farmers.”

Binta Iiyasu grew up in northern Nigeria, where she was among the third primary class to ever be established in Bari, Rogo local government area in Kano State. “Education was delayed in getting to our region,” she says. “But my parents were enlightened by the missionaries about its importance, and they risked sending me and other girls to school.” At age 9, as she prepared to write primary boarding school entry exams, the women from her village pressured Iiyasu to give poor answers to the questions. “They tried to brainwash girls against education, but I went ahead and wrote the exams and passed,” she recalls. “I am thankful that my parents’ hearts were turned toward education. They were undaunted.”

Today, this vibrant mother of five—the first woman university graduate in her community—will soon complete her PhD in Biochemistry at ABU, and she is committed to improving the living standards of smallholder farmers in her region and beyond.

Iiyasu’s current research centers on the development of immunity against *Trypanosoma brucei*, or trypanosomiasis, the most pervasive and serious cattle disease in sub-Saharan Africa, which exists primarily in rural areas where poverty is widespread. “This is a wasting disease that is transmitted by blood-feeding tsetse flies,” she explains. “It is called ‘sleeping sickness’ in humans, and *sammore* in the local language, in animals. Without treatment, both the animals and people die from the disease.” Trypanosomiasis kills between three and seven million cattle annually, costing farmers millions of dollars in lost production and treatment costs. It causes the deaths of an estimated 48,000 people annually, according to the International Livestock Research Institute.

Iiyasu has found problems with the current treatment for trypanosomiasis. “The treatment protocols are very protracted,” she

“To achieve results when I set a goal and to see that I have made an impact gives me great joy. I want my life to be a solution to an existing problem.”



AWARD is a career-development program that equips top women agricultural scientists across sub-Saharan Africa to accelerate agricultural gains by strengthening their research and leadership skills through tailored fellowships. AWARD is a catalyst for innovations with high potential to contribute to the prosperity and well-being of African smallholder farmers, most of whom are women.

AWARD is generously supported by the Bill & Melinda Gates Foundation, the United States Agency for International Development, and the Alliance for a Green Revolution in Africa. For more information, visit www.awardfellowships.org

notes. “In addition, the parasites display resistance to the few existing drugs, which are toxic and very expensive even when they are available.” She is looking at using modern biotechnology tools to develop immunity against the infection. “A wide variety of proteins that are present in the parasite but absent in the host are being identified,” she enthuses. “So this is being exploited—I am studying to explore the difference between the biochemistry of the parasite and the host, as target for a DNA vaccine. Nucleic acid vaccine research is a recent development in vaccine methodology and a novel and powerful alternative to conventional vaccines. It involves the deliberate introduction of a DNA plasmid carrying an antigen-coding gene to produce an immune response that protects against infection.”

Iliyasu says tsetse flies tend to inhabit the most fertile areas of Nigeria—and these lands are being abandoned because of the threat of disease. “The issue of control is urgent because we have seen a resurgence of this disease. Trypanosomiasis now exists in places that were known to be free of the disease, due in part to migration, environmental factors, and political instability that create movement of farmers.” Her lab recently received samples from a certain farm that had lost 40-60 animals. Further investigation found trypanosomiasis.

In the event of an outbreak, Iliyasu visits the affected area along with parasitologists, entomologists, veterinarians, and other colleagues. Her role entails holding focus group discussions with women’s groups and recording her observations. “In the local culture in northern Nigeria, women are not allowed to interact with men—and I was the only female on one of those trips to a village,” she recounts. “The local women turned their backs on us as we tried to interview them because of the presence of the men on the team. Our projects have faced difficulty due to this barrier.”

Iliyasu hopes her research will contribute to improving human and animal health in Nigeria. “I aspire to be a role model who will inspire the participation of women,” she resolves. “I will use my advancement to encourage other women to take up careers in science and also to participate in agricultural research.” In particular, she hopes the use of biotechnology tools will improve agriculture and development in her country.

Iliyasu sees AWARD as just the right motivation she needs to help advance her career. “I am so excited about the opportunities, especially the chance to be mentored by a senior person in my profession, and to explore e-libraries,” she says. She is keen to enhance her leadership and science skills through the training courses offered, and to attend conferences to share her knowledge with other agricultural researchers. She is confident that her role as an AWARD Fellow will have an impact in her workplace as well. “My Director General is expecting me to present a seminar to explain how I have benefited from AWARD and to motivate my colleagues.”

Iliyasu recognizes her parents’ vision and courage, saying they would be proud of where she is now. “To achieve results when I set a goal and to see that I have made an impact gives me great joy,” she concludes. “I want my life to be a solution to an existing problem.”