

ICIPE Microbe research the breakthrough in prevention of malaria?

Musdalafa Lyaga

The International Centre of Insect Physiology and Ecology *icipe* marks 50 years of Malaria-Mosquito research. Dr. David Amudavi, the Executive Director of Biovision Africa Trust (BvAT), has lauded his host and strategic partner for innovative research that continues to attract global recognition.

Says Dr. Amudavi, “Africa and beyond continue to be the beneficiary of *icipe*’s innovative research and technologies generated by teams of dedicated scientists and scholars committed to teaching and nurturing future scientists, conducting research and working closely with

communities to develop home-grown solutions to human, animal, plant and environmental health.”

Biovision Africa Trust works closely with *icipe* through its Farmer Communication Programme to disseminate the centre’s innovations and technologies to farmers through Radio, Magazine, Outreach and an online (Infonet) library for farmers and other users.

Musdalafa Lyaga interviews Dr. Jeremy Herren on his team’s breakthrough research, a result of inspiring international collaborative effort. The team identified a new microbe, named *Microsporidia MB* that can prevent mosquitoes from being infected by malaria parasites.



Jeremy Herren at the Martin Lüscher Emerging Infectious Disease Laboratory in *icipe* duduville campus. Photo credits *icipe*

This microbe can be used to block the transmission of malaria parasites from mosquito vectors to humans.

Q: International Centre of Insect Physiology and Ecology, *icipe* is well known for providing solutions to Human, Animal, Plant and Environmental Health, the 4H paradigm. Tell us about the recent breakthrough in Malaria transmission-blocking microbe in mosquitoes.

We started by identifying symbionts and then demonstrated its characteristics and showed indeed it can block malaria parasites from being transmitted. A *symbiont* is an organism that is very closely associated with another, usually larger, organism. This larger organism is called a host. A *symbiont* can live on, in, or sometimes very near its host. We found a novel microsporidian symbiont that lives in *Anopheles* (malaria) mosquitoes. This symbiont is able to prevent mosquitoes from transmitting the malaria parasite and also can spread from one generation of mosquitoes to the next where mothers infect their offspring. Together, these attributes led us to believe that we might be able to disseminate the microbe to prevent malaria transmission and decrease the number of malaria cases in humans.

Q: Malaria is the tropics’ most serious infectious disease, with its heaviest burden felt in sub Saharan Africa (SSA). What does this development mean in the reduction of malaria cases?

For effective and sustainable control of malaria to be achieved, new tools and approaches for fighting the disease’s parasites and mosquito

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vectors are urgently needed. This is because vector control and treatment methods previously effective in controlling malaria are now largely ineffective due to the growing prevalence of insecticide-resistant mosquitoes and drug-resistant parasites. Our research work is still in its early stages but this finding of the microbe is very promising. It is completely different from all the other methods currently used to control malaria and therefore could be used synergistically and in complementary ways with them to deal a much more powerful blow against this deadly disease.

Q: Please tell us about the programs and activities you have been involved in that are helping to increase awareness and scale up Malaria elimination especially in sub Saharan Africa?

In addition to our research activities, we have also been prioritizing community engagement. We want the public to understand malaria as well as the concepts behind our proposed strategy to control it. We have held a number of activities in Western Kenya, including a Malaria Exploration course that gave primary

school students a chance to see what we do first hand. We hope to carry out many more similar courses in different locations in the coming years. Youth are very central to malaria control strategies.

Q: In the most recent case of COVID-19, it has been observed that the cases of people affected with the COVID-19 are more prevalent in countries where there are very few cases of people suffering from Malaria and vice versa. What is your take on this?

I think there are too many confounding factors for us to be able to directly link these two things. Certainly, Africa hasn’t been hit as hard as some other continents yet but we should continue to exercise caution and do what we can to limit the spread of COVID-19. It is also important that we don’t let COVID-19 get in the way of ongoing efforts to control other infectious diseases, including malaria.

According to the Health Policy watch website, this breakthrough comes at a time when the World Health Organisation (WHO) has warned that the current COVID-19 outbreak could increase deaths from malaria as focus shifts towards the coronavirus, and called for continued research and advancements in this area.

Musdalafa Lyaga is the producer of Kilimo Hai, a BvAT Farmer Radio Program on ecological sustainable agriculture aired every Thursday at 7.30 PM on Radio Maisha. He can be contacted via email; omusdalafa@biovisionafrica.org