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Elephantiasis | Scientists will be able to pinpoint species carrying disease

By THANA DHARMARAJAH

GUELPH, Ont. - A Canadian scientist's DNA barcoding technology is being used for the first time in a medical fight to eradicate mosquitoes spreading elephantiasis.

The Noguchi Memorial Institute for Medical Research at the University of Ghana is working to identify and map mosquito species.

"I'm rather pleased that it has happened so quickly," said Prof. Paul Hebert, chair of the Biodiversity Institute of Ontario at the University of Guelph. "It's nice to see applications advancing."

Hebert said barcoding has been used to identify mosquitoes before, but this is a first for a scientific team to use it to attack a disease.

Elephantiasis affects millions around the world, causing extreme enlargement of the limbs and other body parts.

It results from microscopic, thread-like worms that spread to humans through a mosquito's bite. Within the human blood, the worm larvae grow into adults which mate and produce larvae, called microfilariae.

James Edwards, president of the JRS Biodiversity Foundation, which is providing about US$200,000 in funding to the Ghana project, said the worms block the lymph vessels and cause the body to swell.

"Your legs look like an elephant and your arms get giant-like," he said.

Barcoding would allow scientists to determine whether there are a bunch of mosquitoes that look the same as the region's main vector of elephantiasis, the Anopheles Gambiae mosquito or whether there is only one species carrying the disease.

"They are notoriously difficult to tell apart," Edwards said of the various mosquito species.

So far, through barcoding it has been learned that there are different degrees of infectivity amongst the Anopheles Gambiae, he said, and researchers can now determine where the species reside.

"We can find out where they are so we can treat them with insecticide," Edwards said.

"We don't have to go spraying willy-nilly."

Daniel Boakye, a University of Ghana professor leading the project, said people are currently being treated through a combination drug therapy of albendazole and ivermectin. The drug reduces the density of the worm larvae in humans.

Boakye said now with the barcoding technology they will be able to eradicate the infectious mosquitoes before they bite the humans