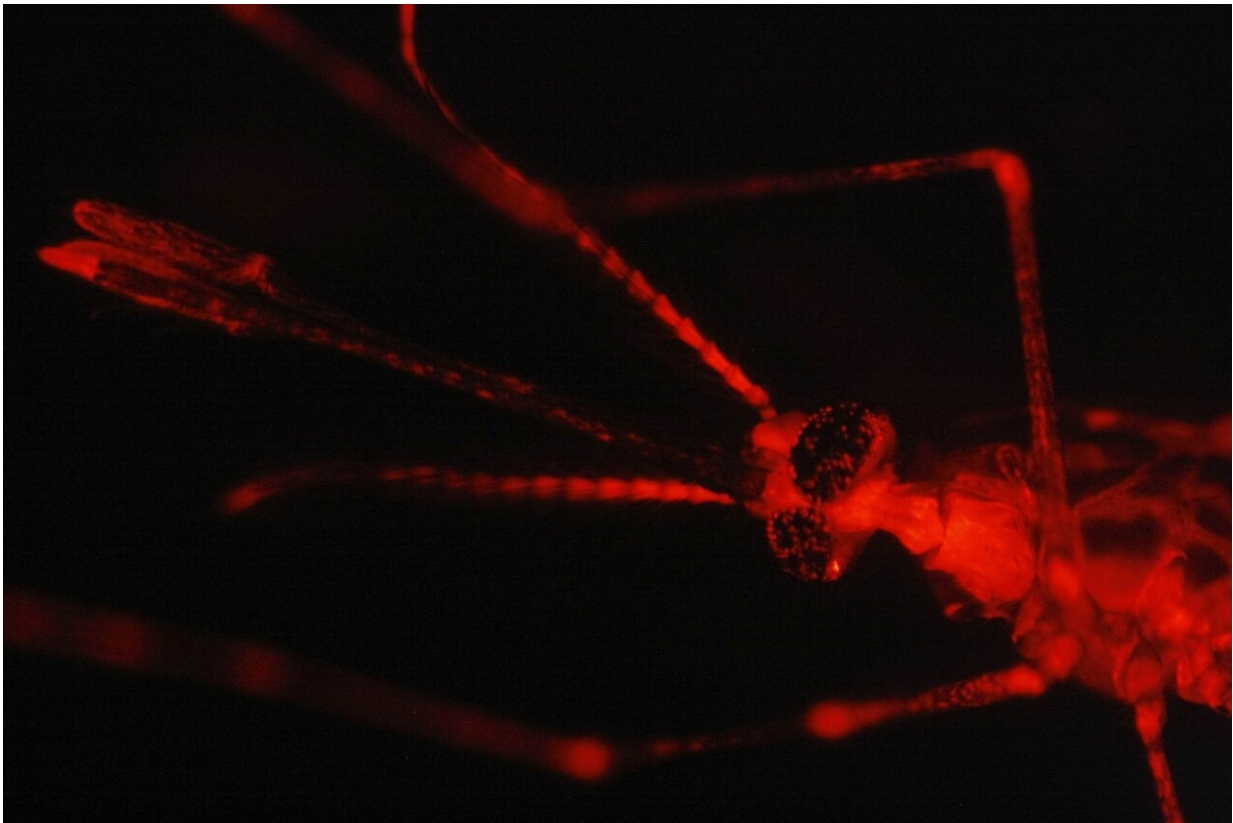


# Scientists identify new marker for insecticide resistance in malaria mosquitoes

December 5 2019

---



*Oopheles gambiae* mosquito showing Gal4 directed ubiquitous expression of red fluorescent protein. Credit: Adriana Adolfi

Researchers at LSTM have genetically modified malaria carrying mosquitoes in order to demonstrate the role of particular genes in

conferring insecticide resistance.

For the first time the team characterized three genes (Cyp6m2, Cyp6p3 and Gste2) most often associated with [insecticide](#) resistance directly by their overproduction in genetically modified *Anopheles gambiae*.

LSTM's Dr. Gareth Lycett is senior author on the paper published today in the journal *PNAS*. He explained: "Malaria is resurging again in Africa as mosquitoes become highly resistant to insecticides that are used to create bednets and spray household surfaces."

To help find the causes of this increased resistance first author, Dr. Adriana Adolphi, and her colleagues at LSTM, generated genetically modified mosquitoes that overproduce specific enzymes that previous work at LSTM had identified as [potential candidates](#) in this process of acquiring [insecticide resistance](#). This breakthrough work has found that increased production of just these three genes can between them cause the mosquitoes to become resistant to all four classes of public health insecticides currently being used in malaria control.

Dr. Lycett continued: "These data validate the particular [genes](#) as excellent markers for resistance, giving us much needed tools to monitor the growing problem effectively through molecular testing. The super-resistant [mosquitoes](#) generated are now also being used test new insecticides to find compounds that escape the activity of these enzymes and so can be incorporated in next generation bednets to again provide effective protection for users and the wider community."

**More information:** Adriana Adolphi et al. Functional genetic validation of key genes conferring insecticide resistance in the major African malaria vector, *Anopheles gambiae*, *Proceedings of the National Academy of Sciences* (2019). [DOI: 10.1073/pnas.1914633116](https://doi.org/10.1073/pnas.1914633116)

Provided by Liverpool School of Tropical Medicine

Citation: Scientists identify new marker for insecticide resistance in malaria mosquitoes (2019, December 5) retrieved 23 June 2024 from <https://phys.org/news/2019-12-scientists-marker-insecticide-resistance-malaria.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.