

7

MAY

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Genetically engineered mosquitoes block development of
circulating malaria strains

Dickson Wilson

Inserm

La science pour la santé
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Dickson Wilson

Dickson Wilson Lwetoijera is Principal Research Scientist at Ifakara Health Institute (IHI), a Wellcome Trust International Intermediate Fellow (2020-2026), and an affiliate of the African Academy of Sciences (2020-2025).

Lwetoijera graduated with MSc Applied Zoology from University of Dar es Salaam, and PhD in Medical entomology from Liverpool school of Tropical Medicine, and Advanced Diploma in International Health Management at Swiss-TPH.

Lwetoijera's research focuses on alternative and transformative vector control tools with the potential to target mosquitoes outdoors. Specifically, genetic-based technologies, such as gene drive for mosquito control, and he is currently leading Transmission Zero (T0), a global malaria research programme at IHI and Imperial College London working to develop innovative genetic tools to stop malaria transmission in Africa. Under the T0 programme, he coordinates research activities and associated capacity building, infrastructure development, high-level engagement, and regulatory activities toward an eventual field trial of gene drive technology for malaria elimination.



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Genetically engineered mosquitoes block development of circulating malaria strains

With progress in malaria control having stalled and remaining under threat, complementary innovative tools such as gene-drive mosquitoes are increasingly needed to strengthen elimination efforts, as highlighted by World Malaria Report 2025. This article reports a major advance of genetically engineered *Anopheles gambiae* mosquitoes that block *Plasmodium falciparum* development, including parasite strains from infected Tanzanian children. The engineered mosquitoes carried antiparasitic peptides and a Cas9-based inheritance system that increased transmission of the protective trait. The work also established high-level biosafety infrastructure in Tanzania, demonstrating local scientific leadership and offering a promising, complementary, self-sustaining strategy for future malaria elimination across African settings at scale.