

Target Malaria: Burkina Faso

Who we are?

Target Malaria is a not-for-profit research consortium that aims to develop and share new technologies for malaria control. The Research Institute of Health Sciences (*Institut de Recherche en Sciences de la Santé/IRSS*) is our partner in Burkina Faso.

Our work

Target Malaria's vision is to contribute to a world free of malaria. Our approach is malaria control by mosquito control. By reducing the population of malaria mosquitoes, we aim to reduce the transmission of the disease.

We aim to develop a technology that can be complementary to other mosquito control methods and which offers a solution that is long term, cost-effective and sustainable.

Target Malaria includes institutions in Africa, Europe and North America. The project is currently working in four African countries:

- Burkina Faso: Institut de Recherche en Sciences de la Santé (IRSS)
- Cabo Verde : Instituto Nacional de Saúde Pública de Cabo Verde (INSP)
- Uganda: Uganda Virus Research Institute (UVRI)
- Ghana: University of Ghana
- Mali: Malaria Research and Training Center (MRTC)

Context

Malaria is a burden on both the economy and the public health system in Burkina Faso.

100% of the population of Burkina Faso is exposed to the risk of malaria.



Over **12 million** infection cases and over **29, 000** deaths linked to malaria in 2020.*

In Africa, **a child dies** of malaria **every minutes**.

Malaria mainly affects poor populations.

The economic loss to Burkina Faso as a result of malaria amounts to several billion CFA Francs.



Various activities and research projects have been established to combat malaria, and over the last decade they have helped to reduce the incidence of malaria, but the number of cases and the death rate remain high.

New tools are needed, and **Target Malaria** is part of this ongoing effort.

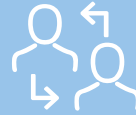
*WHO estimates, World malaria report 2021

Our activities in Burkina Faso



Insectarium

- The ACL-2 insectary was renovated and extended in 2021.
- The biosafety manual and standard operating procedures were revised.
- The insectary was inspected and certified to the standards set by the National Biosafety Agency (ANB) in January 2022.
- The insectary team was trained in biosafety and methods for rearing mosquitoes.
- Authorisation was received to import non gene drive genetically modified male bias mosquito eggs.
- The male bias mosquito strain was imported.
- The strain was reared and maintained, and the colony of non gene drive genetically modified male bias mosquitoes was developed.
- Environmental studies in confined settings were conducted.



Stakeholder engagement

- There is continued dialogue with stakeholders.
- Stakeholders' points of view are taken into account, and the team responds to concerns, ensuring that no project activity in their village is undertaken without their agreement.
- There is continued consultation of stakeholders and the team obtains their agreement when needed, in addition to regulatory authorisations and permits for the import of the male bias strain.



Entomology

- There are regular entomological studies of the project sites to determine the species of mosquitoes present and understand their behaviour.

First phase: non gene drive genetically modified sterile male mosquitoes

Our teams concluded the research phase on the sterile male mosquitoes in 2021. This strain was imported in 2016 to the IRSS where our teams studied it in a confined setting in the ACL-2 insectary. Following regulatory authorisation and community agreement, the small-scale release of non gene drive genetically modified sterile male mosquitoes took place on 1 July 2019 in the village of Bana.

The research, stakeholder engagement and regulatory objectives were achieved: establishing research protocols and achieving approval for the release from authorities,

gaining the agreement of the communities and demonstrating safely how the insects behave in the field.

This was an important stepping stone for the team to build knowledge and develop capacity, paving the way for the implementation of the next phases of the project.

The objectives of the release were achieved as indicated by the results, which were shared with the regulatory authorities and various stakeholders ([factsheet](#)).

We have since published the results of our research on the sterile male in scientific journals*.

Our priority

Second phase: Non gene drive genetically modified male bias mosquito

Target Malaria's second research phase in Burkina Faso involves non gene drive genetically modified male bias mosquitoes. These are genetically modified, fertile male mosquitoes, which produce predominantly male offspring when they mate with wild females. This modification was designed to gradually disappear in natural environments after a period of time if it were the subject of an experimental release.

For this stage to begin, an application for authorisation was submitted to the National Biosafety Agency (ANB) in Burkina Faso, the national regulatory biosafety agency in the country. The ANB granted authorisation for studies in a contained environment in the ACL-2 insectary and in the laboratory of the IRSS (cf N° ARRETE N°2021-287/MESRSI/SG/ANB of 26 July 2021).

In accordance with the regulatory provisions, the ANB also granted regulatory authorisation for the importation of the male bias mosquito eggs (cf N° 2021/000416/ MESRSI/SG/ANB/DG).

The eggs were imported in March 2022 from our partner institution in Italy, Polo d'Innovazione di Genomica, Genetica e Biologia (Polo GGB). Upon arrival in Ouagadougou, the ANB inspected the packages and responded positively. The IRSS research teams are now studying them in a contained environment in the insectary.

Our research is still in its early stages, and although initial results look promising, there is still a long way to go. If it works and is accepted, gene drive technology will be made available to governments of malaria-affected countries without licensing fees.

Our aim is to build a forum for dialogue, trust and sharing between communities, civil society and all stakeholders in scientific progress.

Contact Information:

KEKELE Souleymane - Communications officer
Tel.: (00226) 70 25 77 72
Email: kekeley@gmail.com



* Yao, F.A., Millogo, A.A., Epopa, P.S. et al. Mark-release-recapture experiment in Burkina Faso demonstrates reduced fitness and dispersal of genetically-modified sterile malaria mosquitoes. *Nat Commun* 13, 796 (2022). <https://doi.org/10.1038/s41467-022-28419-0>

Pare Toe, L., Barry, N., Ky, A.D. et al. Small-scale release of non-gene drive mosquitoes in Burkina Faso: from engagement implementation to assessment, a learning journey. *Malar J* 20, 395 (2021). <https://doi.org/10.1186/s12936-021-03929-2>