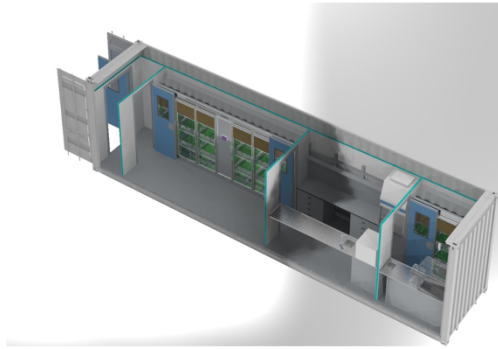
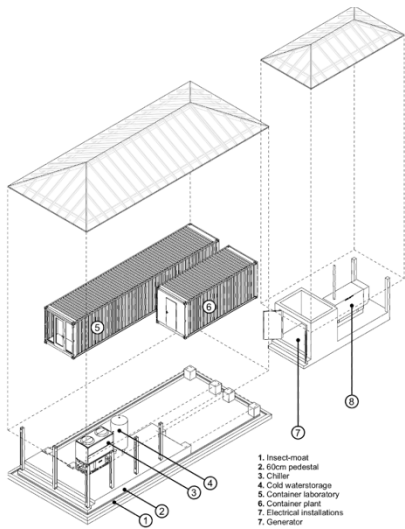


The MPL CL3 laboratory

A dedicated containment and biosafety facility for mosquito and malaria research



FACTS AT A GLANCE

TYPE OF LABORATORY

Containment Level 3

NAME

MPL CL3

PARTNERS

Imperial College London (ICL)
Ifakara Health Institute (IHI)
Tanzanian National Institute
of Medical Research (NIMR)

ESTABLISHED

2021

WEBSITE

www.transmissionzero.org

FOLLOW

Twitter: @transm0

CONTACT

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The CL3 Modular Portable Laboratory is a state-of-the-art facility custom-designed for conducting research on molecular modification of malaria mosquitoes and for testing their vectorial competence with malaria parasites. It was commissioned to house Transmission Zero (T0) research in Tanzania and is located at the Ifakara Health Institute in Bagamoyo.

Laboratory biosafety specifications

An Arthropod Containment Level 2 insectary

The MPL CL3 laboratory is a unique facility custom designed to develop and maintain and characterize genetically modified mosquito strains. It follows international containment guidelines for mosquito containment (ACL standards).

Containment Level 3 laboratory

The laboratory layout, equipment and containment measures abide to international biosafety guidelines for pathogen containment (BSL standards). This allows T0 researchers to culture malaria parasites and test their level of infectivity, hence transmission potential, on novel genetically modified mosquito strains.



A PHASED MODULAR APPROACH

Transmission Zero's approach to vector population modification uses a stepwise and adaptive approach for the development and testing of such scientific concepts. The leading concept involves the functional and physical separation of the transmission-blocking effector and gene drive into distinct modular constructs and strains, thus allowing the development and evaluation of effector strains in endemic settings without the regulatory risks associated with gene drive. In addition, constructs and strains expressing a static source of the drive can be used to augment the frequency of the effector without causing a population-wide gene drive, allowing a wider yet contained spread of the effector. All genetic modifications are minimal and, when possible, fully integrated within a host gene (Integral Gene Drive or IGD), thus also reducing the risk of emergence of resistant alleles to the effector and/or the drive.

GENETIC MODIFICATION MADE IN AFRICA

Capitalising on a number of successes and the favourable enabling environment generated to date, Transmission Zero aims to bring novel genetic modification technologies to Africa, thereby enabling local researchers and health agencies to play an active role in the development of novel genetic control tools.

The first MPL CL3 laboratory was constructed in Europe by Transmission Zero and transported to Tanzania in 2021. It is located in the IHI campus in Bagamoyo, and operated by dedicated highly trained researchers, engineers and technical personnel. It allows researchers to generate transgenic mosquitoes and test their capacity to block malaria transmission.

BIOSAFETY APPROVAL

The MPL CL3 was custom designed to the highest standard through a collaboration between engineers and scientists at Imperial College London and the Ifakara Health Institute. Following the delivery of the core insectary, parasitology modules and integration into a full infrastructure for the future generation of non-drive *Anopheles gambiae* transgenic lines the facility was inspected by international experts. Operation permissions were sought and granted by the Institutional Review Board (IRB) and Institutional Biosafety Committee (IBC) of IHI, as well as by the Medical Research Coordinating Committee (MRCC) of NIMR.

WORKING WITH COMMUNITIES

Tanzanian community stakeholders have been engaged and are constantly informed on the use of genetically modified mosquitoes for malaria transmission research in the MPL CL3.