

Investigators



Dr. Anthony A. James
UC Irvine



Dr. Ethan Bier
UC San Diego



Dr. Greg Lanzaro
UC Davis



Dr. Anthony Cornel
UC Davis
College of Agricultural and
Environmental Sciences



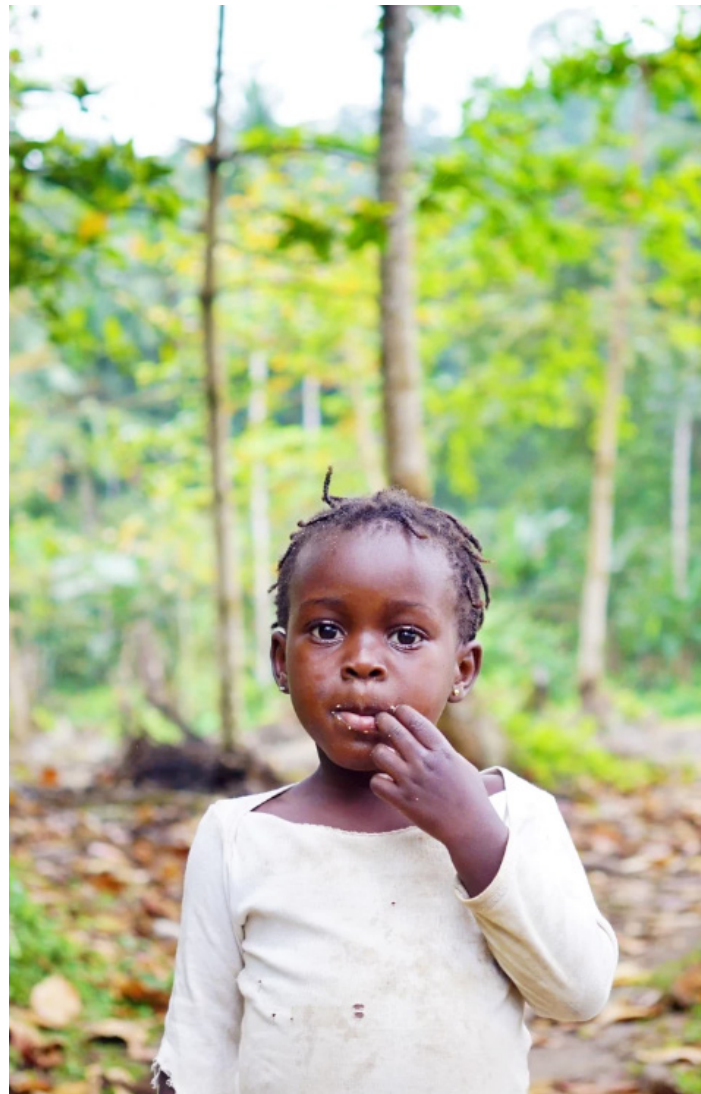
Dr. John Marshall
UC Berkeley



Dr. Ziad Haddad
UC Los Angeles



Ana Kormos, MPH
Community Engagement Specialist
UC Irvine Malaria Initiative



OUR MISSION

We're on the path to end human malaria

For More Information Contact:

Ana Kormos
Community Engagement Specialist,
UCI Malaria Initiative
530.304.7547 | akormos@uci.edu

Visit our website at:
<http://malaria.bio.uci.edu>

Information Guide



Who is UCIMI?

University of California Irvine Malaria Initiative (UCIMI) is a collaborative initiative made up of researchers from 5 different University of California campuses who are dedicated to the elimination of malaria.

The mission of UCIMI

is to eliminate human malaria by modifying mosquito populations to prevent malaria transmission in direct partnership and collaboration with local scientists, public health officials, government officials and communities in an ethical and transparent manner.

What is malaria?

Malaria is a disease caused by protozoan parasites and is transmitted to humans by the bites of infected female mosquitoes.

The World Health Organization (WHO) estimates that there were close to 216 million cases and nearly 445,000 deaths due to malaria in 2016; children under 5 years of age make up the majority of these deaths.

(Source: World Malaria Report 2017, WHO)



What is population modification?

A genetic technology that alters natural mosquito populations to prevent them from transmitting malaria. This is achieved by coupling beneficial genes with a "gene drive".

What are beneficial genes?

Beneficial genes are synthetic genes (made in a laboratory) designed to block malaria parasite development in the mosquito. When beneficial genes are engineered into the mosquito it makes them incapable of transmitting malaria. The beneficial genes do not change the normal behavior or physical structure of the mosquito.



What is gene-drive?

Gene-drive is a way to spread beneficial genes through mosquito populations at rates much higher than usual. Ordinarily, most genes are inherited by one-half (50 percent) of the offspring in the next generation. Mosquito gene-drive technologies result in close to 99 percent of the progeny having the desired gene.

When mosquitoes carrying the beneficial genes and gene drive are released into the wild, we expect the beneficial genes to spread throughout the local mosquito population, preventing further transmission of the disease.

What are the benefits?

- It is sustainable
- It is low cost. It does not require constant sources of funding in order to sustain low levels of malaria transmission.
- It doesn't eliminate mosquito populations; it has little to no impact on the food chain
- Reduces the amounts of insecticides used
- Mosquito behavior and physiology stays the same
- Provides malaria endemic countries with a malaria control option adapted specifically for their environment.

What is next?

The UCIMI approach is to work in partnership and collaboration with government, local agencies, educators, and community members in countries where modified mosquitoes might be able to be tested.

UCIMI uses WHO guidelines for testing genetically modified organisms, which means that before any mosquito with beneficial genes is released, there are phases of testing and data collection that must be done in partnership with the country that would like to consider this malaria control strategy.

UCIMI is led by Dr. Anthony James at UCI. This project is funded by: University of California, Irvine Malaria Initiative, The Bill and Melinda Gates Foundation, The National Institutes of Health, and the W.M. Keck Foundation.