USAID
FROM THE AMERICAN PEOPLE

COMBATING ZIKA AND FUTURE THREATS

A GRAND CHALLENGE FOR DEVELOPMENT

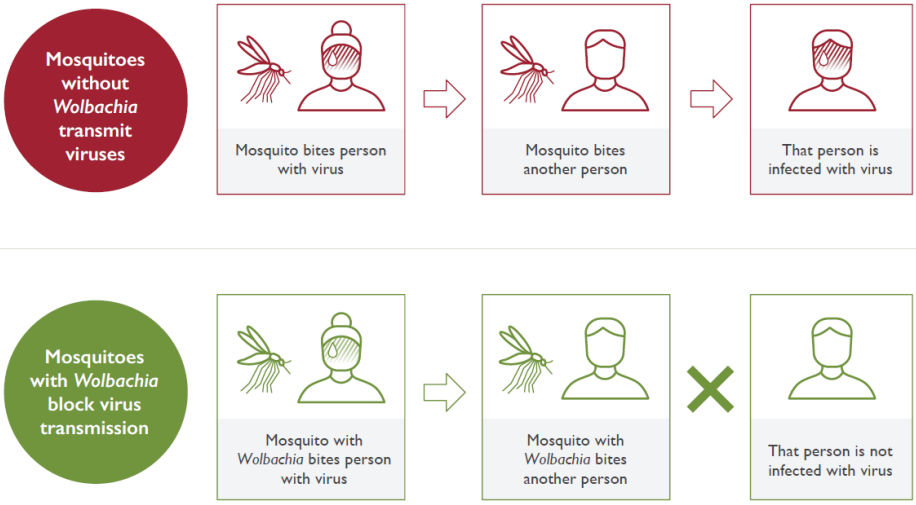
World Mosquito Program™

Using Wolbachia to prevent disease transmission

In response to the 2016 Zika outbreak, USAID's Center for Innovation and Impact (CII) launched *Combating Zika and Future Threats: A Grand Challenge for Development (CZFT)* in 2016. The program provided catalytic funding and support, awarding $30M to 26 innovators across 7 innovation categories

Wolbachia is a bacteria that blocks virus transmission from infected insects to humans. It occurs naturally in many insects but not in Aedes aegypti, the mosquitoes that carry dengue, Zika, and chikungunya. The World Mosquito Program (WMP) has developed a way to breed Aedes aegypti mosquitoes that carry Wolbachia. Once Wolbachia-carrying mosquitos are released into a community, they are self-sustaining: breeding with wild mosquitoes and passing the bacteria onto their offspring, thereby greatly reducing the incidence of mosquito-borne diseases being transmitted to humans over time. A recent randomized controlled trial concluded that communities treated with Wolbachia mosquitoes saw a 77% reduction in dengue, showing promise for arboviral virus control.

CZFT provided WMP with funding to pilot large-scale deployment of Wolbachia-carrying mosquitoes in Latin America. This was the first time the WMP had received funding to test its Wolbachia-carrying mosquitoes in a large, complex urban environment. The selection of WMP proved instrumental in CZFT's broader strategy of creating system-level innovations that could address Zika.



Overview of Wolbachia-carrying mosquito intervention (diagram courtesy of World Mosquito Program)

The Center for Innovation and Impact (CII) applies innovative, market-based, and digital health approaches to accelerate impact against critical health issues.

CZFT funding helped WMP refine and pilot its deployment methodology to make it more scalable in large, complex environments

WMP demonstrated ability of Wolbachia to work at larger scale. Not only was WMP able to successfully demonstrate that large-scale deployments of Wolbachia-carrying mosquitoes can blunt the spread of Zika and other *Aedes*-borne arboviruses (e.g., dengue), but it was also able to translate this success into streams of follow-on funding from donors and has begun to launch other deployments across Latin America and Asia Pacific. This progress has helped it to achieve an endorsement from the WHO's Vector Control Advisory Group.

"USAID's support helped prove that Wolbachia-carrying mosquitoes can be safely and effectively released at scale across large urban areas."

WMP received both funding and non-financial support to accelerate scale-up. CII partnered with WMP to support key components of a global launch plan. Examples of support offered: projection of cost effectiveness under various rollout scenarios , creation of a country-prioritization framework, evaluation of costs and potential funding sources for country rollouts and centralized support.

"USAID helped us forge important partnerships in Latin America and take our work to scale."

Unique partnerships fostered through CZFT helped WMP innovate its deployment approach. WMP and WeRobotics formed a partnership to test a mosquito deployment methodology involving Unmanned Aerial Vehicles (UAVs), which has seen success in Fiji and other countries in the Asia Pacific region. These types of synergistic partnerships were core to the philosophy of CZFT, in which innovators were not intended to be stand-alone, but rather members of an ecosystem of interventions against Zika and future threats.

"The WMP partnership with WeRobotics in Fiji helped us pioneer a new way to release Wolbachia-carrying mosquitoes in hard-to-reach communities."

WMP exemplifies the transition from academia to global scale-up. WMP began as an applied research project in Melbourne's Monash University, and has since grown into a non-profit bio-tech interrupter with operations spanning eleven countries. A key success factor for enabling this evolution out of the academic environment was WMP's leadership determination to not only prove, but also scale the innovation. Its work earned it a place on MacArthur Foundation's 100&Change shortlist.