

Genetically engineered...mosquitoes?

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Dear EarthTalk: I couldn't believe my ears: "genetically engineered mosquitoes?" Why on Earth would they be created? And I understand there are plans to release them into the wild?
-- Marissa Abingdon, Sumter, SC

In a very controversial experiment, genetically engineered mosquitoes, which were bred to transmit a gene during the reproductive process that kills their offspring, have been used in three countries—the Cayman Islands, Malaysia and Brazil—to counteract the quickly spreading mosquito-borne viral infection dengue fever.

Credit: USDA

Yes it's true, genetically engineered mosquitoes, which were bred in the lab to transmit a gene during the reproductive process that kills their offspring, have already been used on an experimental basis in three countries—the Cayman Islands, Malaysia and Brazil—to counteract the quickly spreading E mosquito-borne viral infection dengue fever. The World Health Organization (WHO) estimates that as many as 100 million cases of humans infected with dengue fever—which causes a severe flu-like illness and can in certain instances be fatal—occur annually in more than 100 tropical and sub-tropical countries.

The British company behind the project, Oxitec, is focusing initially on dengue fever, given that the particular virus which causes it is only carried by one sub-species of mosquito. This makes the illness easier to target than malaria, for instance, which is carried by many different types of mosquitoes.

Oxitec first released some of the genetically modified mosquitoes in the Cayman Island in the Caribbean in 2009, much to the surprise of the international community and environmental advocates, many of whom are opposed to genetic engineering in any of its forms due to the

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unknown and unintended side effects that unleashing transgenic organisms into the world could cause.

In Brazil, where the largest experiments have been carried out to date, the government is backing a new facility designed to breed millions of genetically engineered mosquitoes to help keep dengue fever at bay.

Dengue fever isn't considered to be a big problem in the U.S. as yet. The U.S. Centers for Disease Control and Prevention reports that most of the dengue fever cases showing up in the continental U.S. are among those who have travelled to sub-tropical and tropical areas of the world. Still, WHO reports that the incidence of dengue fever in the U.S. has increased some thirty-fold over the last half century.

A proposal by Oxitec to test its transgenic mosquitoes in the Florida Keys has some locals upset. In April 2012, the town of Key West passed an ordinance prohibiting the release of the mosquitoes pending further testing on possible implications for the environment. In the meantime, Oxitec has applied to the U.S. Food and Drug Administration (FDA) for a patent on their mosquito and permission to release them in the U.S.

Some 80,000 people have signed onto a campaign on the Change.org website calling on the FDA to deny Oxitec's application. Mila de Mier, the Key West mother who launched the campaign, is concerned about the potential consequences of releasing an experimental organism on a delicate ecosystem.

"Oxitec's business goal is to sell genetically modified mosquitoes in the United States," said de Mier. "...we've already said we don't want these mosquitoes in our backyards, but Oxitec isn't listening." More definitive scientific study is needed, she says, that looks at the potential long-term impacts.

CONTACTS: Oxitec, www.oxitec.com; Change.org, www.change.org.

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