

Team Number:

School Name: Los Alamos Middle School

Area of Science: Environmental science

Title: GMO Mosquitoes into the Wild? We Should Model that First!

Proposal:

Zika is a virus transmitted by the female of mosquitoes *Aedes aegypti*. Zika usually has little effect on most people but can give the fetus of a pregnant woman birth defects. Other possible effects of the Zika virus in humans are brain damage to fetus and adults, also paralysis in adults. The symptoms of Zika are rather mild, bumpy rash, headaches, joint pains, and red eyes in adults, but only one in five people show the symptoms.

One of the ways scientists hope to fight the disease is by releasing genetically modified organism (GMO) versions of the *Aedes aegypti*. The GMO mosquitoes have been modified in a laboratory with a synthetic protein that kills their offspring before they can emerge from the larva stage as adults and transmit the Zika virus. If wild female mosquitoes mate with GMO males, the population dies off rapidly in experimental models.

Our team hopes to create a computer model that simulates this interaction to understand how GMO mosquitos affect wild populations and how well or effectively they control the spread of Zika. We are going to model the interaction using Starlogo (TNG).

Three steps to our project:

Step 1: Model the spread of Zika

Step 2: Model the GMO mosquitos and their effect on the overall mosquito population

Step 3: Model the effectiveness of decreasing Zika spread with GMO mosquitos

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