

## How evolution is dampening disease-fighting effectiveness of gene drives

[Gene drives] can quickly disseminate genetic modifications in wild populations through an organism's offspring, [prompting some activists to call for it to be shelved](#). Yet gene drives might not be as effective as activists think. Recent research has identified a major hurdle to using them to eliminate diseases and vanquish invasive pests: evolution.

Organisms altered by gene drives, including mosquitoes, have shown promise in [proof-of-concept laboratory experiments](#). But wild populations will almost certainly develop resistance to the modifications. Researchers have begun identifying how this occurs so that they can address the problem.

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Just as antibiotics enable the rise of drug-resistant bacteria, population-suppressing gene drives create the ideal conditions for resistant organisms to flourish.

One source of this resistance is the CRISPR system itself, which uses an enzyme to cut a specific DNA sequence and insert whatever genetic code a researcher wants. Occasionally, however, cells sew the incision back together after adding or deleting random DNA letters. This can result in a sequence that the CRISPR gene-drive system no longer recognizes, halting the spread of the modified code.

The researchers building the mosquito cage in Italy, part of a multimillion-dollar project called Target Malaria, found this form of resistance in some mosquitoes.

**The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion, and analysis. Read full, original post:** [Gene drives thwarted by emergence of resistant organisms](#)