

## ‘Magic bullet or genetic atom bomb?’: Exploring unintended consequences of using gene drives to eradicate disease-spreading mosquitoes

Every year [more than 600,000 people die from mosquito-transmitted malaria](#), most of them children under age five. Some insects that are disease vectors, such as mosquitoes, are currently expanding their range around the world, bringing new threats. Genetic engineering can fix this by permanently altering insect genes through what is known as a [gene drive](#).

This technology allows a chosen set of genes to alter an animal’s biology in some way, such as making them produce sterile offspring. The inability to reproduce then sweeps through a population, upending the laws of inheritance.

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The genes copy themselves exponentially from generation to generation, rapidly coming to dominate the whole population. Potentially, their careful use might save millions of lives by making [mosquitoes unable to transmit malaria](#) or by eliminating the insects entirely. The possibility of a definitive solution to major infectious diseases makes a compelling case for a such a techno fix.

Still, you do not need to be a Luddite or a technothriller writer to imagine how this could all go horribly wrong. Ecology is complicated, and delicate ecosystem balances could be profoundly disrupted. Poorly designed gene drives might even jump to closely related animals that, for example, do not carry disease, creating a disastrous cascade.

[\*\*This is an excerpt. Read the full article here\*\*](#)