

Adding an alligator gene to reduce infections in farmed catfish

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A team of aquaculture and aquatic scientists at Auburn University has found a way to reduce infection rates in catfish raised on fish farms by giving them an alligator gene. The group used the CRISPR/Cas9 gene editing system to add a special gene to the catfish genome that helps alligators ward off infections. They have presented their results in a paper uploaded to the *bioRxiv* preprint server.

Catfish is a prized delicacy in many parts of the Southern U.S. and is in high demand. Keeping up with the demand has proven to be challenging, however, which has led to the creation of [catfish](#) farms. Such farms have been found to be highly profitable, but suffer from low yields due to high bacterial [infection rates](#). Currently, only 55% of fingerlings survive to adulthood—a number fish farmers would like to see greatly increased. Catfish farming is big business, accounting for roughly half of all fish farming efforts in the U.S., so improving yields would greatly increase profits. In this new effort, the researchers looked to alligators for assistance.

Prior research has shown that alligators have a gene that codes for cathelicidin, a protein that helps alligators ward off infections from cuts they incur during battles with other alligators. The team in Alabama wondered what might happen if they removed that gene and inserted it into the genome of a catfish. They used CRISPR/Cas9 to find out, but they did it in a clever way. They inserted the gene into the catfish in a part of the genome involved in reproduction. This effectively rendered the fish infertile, which is an important attribute for a genetically modified fish to keep it from propagating out into the wild should one or more of them escape from their enclosure.

Testing showed the experiment worked as hoped—the engineered [fish](#) had a survival rate 100%–400% higher than native catfish. More testing is required to ensure that other changes to the catfish do not arise. Also, getting people in the deep South to accept genetically modified catfish

might be a challenge.

More information: Jinhai Wang et al, Generation of eco-friendly channel catfish, *Ictalurus punctatus*, harboring alligator cathelicidin gene with robust disease resistance by harnessing different CRISPR/Cas9-mediated systems, *bioRxiv* (2023). [DOI: 10.1101/2023.01.05.522889](https://doi.org/10.1101/2023.01.05.522889)

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