



# THE CENTER FOR FOOD SAFETY

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## Frequently Asked Questions About Genetically Engineered Fish

**Q: How are GE fish different from wild fish?**

**A:** GE fish are different from wild fish because they have been genetically engineered to contain a desired trait. Biotechnologists are now able to take genetic material from one organism and insert it into the permanent genetic code of another fish. There are already over thirty-five species of GE fish currently being developed around the world. Some of these GE fish contain genes from other fish, humans, and insects.

**Q: Are GE fish being developed for commercial purposes?**

**A:** GE fish are being developed for commercial purposes. For example, some GE fish are being developed to grow faster, resist disease, and tolerate different temperatures. At least one company, Aqua Bounty Farms, is currently requesting approval from the U.S. Food and Drug Administration ("FDA") to market its GE fish to consumers for food. Aqua Bounty Farms' GE fish contain a growth hormone gene from a Chinook salmon and an antifreeze protein gene promoter from an ocean pout that keeps the growth hormone active. This transgene is injected into fertilized eggs. Due to the continuous production of the growth hormone gene, these GE fish grow as much as ten to thirty times faster than normal salmon.

**Q: Are there any federal laws that specifically govern the regulation of GE animals grown for human consumption?**

**A:** While no federal laws specifically govern the regulation of GE animals grown for human consumption, the FDA has made the informal decision to regulate GE fish under its authority to review new animal drugs. To receive FDA approval to commercialize GE fish, producers must complete a New Animal Drug Application (NADA) and demonstrate the safety and effectiveness of these fish. However, FDA exempts NADA's from environmental review and the trials are kept secret from the public. Concerned about the lack of existing laws governing GE fish, the states of Maryland, Oregon, and Washington passed laws that restrict the use of GE fish within their state boundaries.

**Q: Are GE fish currently being sold to consumers as food?**

**A:** In the U.S., the FDA has not yet granted approval to any producer of GE fish to market these fish to consumers as food. However, it is reported that the FDA may make a decision soon. In China, it is reported that GE carp is already in commercial production and in Cuba it is reported that GE tilapia is being sold to consumers.

**Q: What are the human health concerns with consuming GE fish?**

**A:** There are potential toxicity, allergenicity, and aquaculture disease concerns posed by the commercialization of GE fish. FDA has not stated whether they will require the mandatory labeling of GE fish products sold to consumers.

**Q: How do producers of GE fish intend to grow them?**

**A:** Most fish farmers grow fish in ocean or net pens. Ocean pens are more cost effective than growing fish in enclosed land based systems, however, ocean pens are highly susceptible to breakage caused by weather, human error, and predator attacks. On average 15% of farmed fish escape. There are also incidences of mass fish escape. Recently, in Maine, over 170,000 farm raised salmon escaped from a net pen after a storm.

**Q: What are the environmental concerns associated with GE fish?**

**A:** If GE fish escape from ocean pens into the environment, they will likely affect wild populations of fish. Studies show that GE fish are more aggressive, consume more food, and attract more mates than wild fish. These studies also show that although GE fish will attract more mates, their offspring will be less fit and less likely to survive. As a result, some scientists predict that GE fish will cause some species to become extinct within only a few generations.

**Q: What have the federal fishery agencies said about the use of GE fish?**

**A:** Concerned about the imperiled status of wild Atlantic salmon in Maine, the federal fishery agencies have already stated that they cannot accept the use of any GE salmon in marine cages in Maine at this time.

**Q: Is the U.S. part of any international agreements regarding the use of GE fish?**

**A:** The United States is part of the international body "NASCO" (National Atlantic Salmon Conservation Organization). The parties to NASCO have established guidelines on GE fish. These guidelines state that GE fish are only to be grown in secure and confined land based systems. In June 2001, all the parties, including the U.S., agreed to support the guidelines.

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660 Pennsylvania Ave. SE, Suite 302  
Washington, D.C. 20003  
202-547-9359 (p) 202-547-9429 (f)  
[www.gefish.org](http://www.gefish.org)