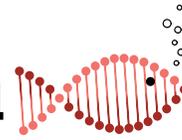


Pledge for GE-Free Seafood



Genetically engineered fish: Frequently asked questions

Genetically engineered salmon is poised to enter the U.S. marketplace without adequate assessment of possible risks to human health, the environment, fish populations, animal welfare, fishing communities on both coasts and a sustainable future for fish.

The U.S. Food & Drug Administration recently announced it was in the final stages of approving the genetically engineered AquAdvantage Salmon. If approved, this would be the first-ever genetically engineered animal allowed to enter the U.S. food supply. The FDA's decision on the AquAdvantage Salmon will set a precedent and could open the floodgates for other genetically engineered fish and animals (including cows, pigs and chickens) to enter the U.S. market.

What is genetically engineered salmon?

The AquAdvantage Salmon is an Atlantic salmon developed by the biotech company AquaBounty Technologies by artificially combining growth hormone genes from Chinook salmon and DNA from the anti-freeze genes of an eel-like ocean pout. This modification causes the production of growth hormone year-round, creating a fish that the company claims grows at twice the rate of conventionally farmed salmon.

Does the public support the approval of genetically engineered fish and animals?

Polls show that 91 percent of Americans do not want the FDA to allow GE fish and meat into the marketplace¹ and 95 percent of consumers believe GE food animals should be labeled.² To date, nearly 400,000 public comments and joint letters from over 300 environmental, consumer, health, and animal welfare organizations, along with members of Congress, salmon and fishing groups and associations, food companies, chefs and restaurants have been sent to the FDA demanding the agency reject this application and require mandatory labeling of genetically engineered fish if they are approved.

Will genetically engineered fish harm the environment?

FDA has not yet sufficiently studied the full range of risks escaped or released AquAdvantage Salmon may pose to the environment. Studies on Coho salmon with an engineered growth hormone similar to the AquAdvantage Salmon found that genetically engineered salmon were more aggressive when searching for food (the growth hormone made them hungrier), and in some instances resorted to cannibalism.³ The aggressive behavior evident in genetically engineered salmon led to population crashes and even the complete extinction of some wild salmon species in the study.⁴ Other research has shown that a release of just 60 genetically engineered fish in a population of 60,000 could lead to the extinction of the wild population in less than 40 generations.⁵ FDA must more thoroughly consider these and other potential risks before allowing commercialization of AquAdvantage Salmon.

AquaBounty's egg production facility on Prince Edward Island was infected with Infectious Salmon Anemia in 2009,⁶ which it initially failed to report to the FDA.⁷ This virus is extremely deadly to salmon and has decimated the Chilean and Scottish salmon farming industries. If this or other diseases were to break out at genetically engineered fish farms and then those fish escaped, they could wreak havoc on wild fish populations. Declines in wild salmon could also cause massive harm to fishers and fishing communities on both coasts.

Is genetically engineered fish safe to eat?

Unfortunately, the FDA decided these fish will be safe to eat based solely on data provided by AquaBounty. Of potential concern to human health is the fact that, according to data submitted to FDA, overall all GE salmon have 40 percent higher levels of the hormone called IGF-1 (insulin-like growth factor 1), which may increase the risk of certain cancers⁸ if absorbed and biologically active in the human body. In addition, the findings on allergy risk were based on only six fish.⁹ The fact is that the science is simply not there to say whether or not genetically fish are safe to eat and further studies are needed.

Many people eat salmon because of its health benefits, but unfortunately it appears that genetically engineered salmon is less nutritious than other salmon. Genetically engineered salmon have been found to have a lower omega-3 to omega-6 fatty acid ratio than other salmon, 15 percent less than conventionally farmed salmon and 65 percent less than wild salmon.¹⁰

Will genetically engineered fish be labeled?

Probably not. The FDA has stated it will likely not require genetically engineered salmon to be labeled, providing consumers no way of knowing whether the fish sold at their grocery store is genetically engineered. This may lead to market confusion and people choosing to avoid salmon entirely.

How can I take action?

Visit our website, www.gefreeseafood.org to get involved! You can also write to your favorite grocery stores, restaurants, and chefs and ask them to sign the **Pledge for Genetically Engineered-Free Seafood**.

You can also send comments to the FDA saying you do not want genetically engineered fish to be approved. Visit www.gefreeseafood.org to learn more!

(Endnotes)

- 1 *Lake Research Partners, Commissioned by Food and Water Watch, 9/20/10. "Americans in near unanimity on their disapproval of genetically engineered fish and meat in the marketplace" <http://www.saynotogmos.org/ud2010/docs/fish_survey.pdf>.*
- 2 Consumer Reports National Research Center. *CR Poll: Two-thirds of Americans Want FDA to Inspect Domestic, Foreign Food Supply Overwhelming Majority of Consumers Want Country of Origin Labeling Loopholes Closed; GE and Cloned Animals Labeled.* http://www.consumersunion.org/pub/core_food_safety/006298.html. Consumers Union, 11 Nov. 2008.
- 3 Devlin, R. H., Mark D'Andrade, Mitchell Uh, and Carlo A. Biagi. "Population Effects of Growth Hormone Transgenic Coho Salmon Depend on Food Availability and Genotype by Environment Interactions." *Proceedings of the National Academy of Sciences* 101.25 (2004): 9303-308.
- 4 Ibid.
- 5 W.M. Muir & R.D. Howard, *Possible Ecological Risks of Transgenic Organism Release when Transgenes Affect Mating Success: Sexual Selection and the Trojan Gene Hypothesis*, in 96 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES 13853-56 (1999).
- 6 "AquaAdvantage® Salmon Draft Environmental Assessment." Page 43.
- 7 Entine, John. "Genetically Modified Salmon: AquaAdvantage FDA Assessment Is Delayed Possibly by the White House." *Slate*, 19 Dec. 2012.
- 8 Yu H. and T. Rohan. "Role of the Insulin-Like Growth Factor Family in Cancer Development and Progression." *Journal of the National Cancer Institute*, vol. 92, iss. 18. September 20, 2000; and Moschos, S. and C. Mantzoros. "The Role of the IGF System in Cancer: From Basic to Clinical Studies and Clinical Applications." *Oncology*, vol. 63 iss. 4. November 4, 2002.
- 9 Ibid.
- 10 *Comments of Consumers Union on Genetically Engineered Salmon*, 16 Sept. 2010. <<http://www.consumersunion.org/pdf/CU-comments-GE-salmon-0910.pdf>>.