

Frankenfish Salmon

The United States is close to approving genetically engineered salmon in what could well turn out to be a global problem

The United States Food and Drug Administration (FDA) announced on 25 August 2010 that it is considering approval of a genetically engineered (GE) salmon for human consumption, which would make it the first GE animal in the world to enter the food supply chain. Approval of this transgenic salmon is extremely problematic for fishing communities and consumers in the US and around the world.

The Atlantic salmon in question has been genetically engineered by AquaBounty Technologies to produce growth hormones year-round, which, the company claims, will make it grow twice as fast. This is done by artificially combining growth hormone genes from an unrelated Pacific salmon (*Oncorhynchus tshawytscha*) with deoxyribonucleic acid (DNA) from the anti-freeze genes of an eelpout.

AquaBounty plans to fertilize their GE salmon eggs on Prince Edward Island in Canada, grow out the salmon in contained inland tanks in Panama, and then process and ship the fish back to the US for consumption. While these conditions were submitted for original approval of their GE salmon, this is clearly just the beginning for AquaBounty. As the company's chief executive officer proclaimed at a public FDA hearing, they fully intend to expand operations in the US and around the world, particularly close to population centres. Even so, the FDA is now only looking at the environmental threats from current Canada-Panama-US operations instead of the cumulative environmental impacts from AquaBounty's full-scale commercialization plans. Each

operation on its own may have individualized and locally specific risks but if you look at the big picture, the environmental harms are far-reaching and significant.

The FDA is hoping to approve this GE salmon for human consumption under a questionable process intended for new animal drugs instead of a new food. This new animal drug approval process limits the amount of data that is released to the public since AquaBounty can claim that much of the GE salmon data is proprietary and, therefore, must be kept secret. Additionally, any new facility the

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company hopes to raise fish in, if approved, can be built later as a new drug manufacturing facility with even less environmental review.

Biodiversity problems

GE salmon could pose serious threats to biodiversity and, in particular, to the viability of wild Atlantic salmon, should they escape from production facilities. Salmon regularly escape from aquaculture facilities, interbreeding with wild salmon, and diminishing the fitness of the wild populations. In fact, Atlantic salmon were placed on the endangered species list in the US due, in part, to genetic and fitness impairments caused by inbreeding with farmed salmon escaping from net

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pens. If salmon genetically engineered to grow faster than wild fish escape confinement, they will threaten the health and survival of wild salmon populations. According to research from Purdue University, if just 60 GE fish were released into a wild population of 60,000, the wild population could be extinct within 40 generations. This result is driven by the ‘Trojan gene effect’ in which specific fitness advantages in an

food chains in the wild has not been studied.

AquaBounty claims that their fish will be sterilized, but even their own data admits that up to five per cent of the eggs may remain fertile. AquaBounty claims to have orders for 15 mn eggs. That means that right off the bat, we may have up to 750,000 fertile fish that could escape and wreak havoc on the environment. Even more troubling is the fact that AquaBounty will still need fertile males and females to fertilize their genetically engineered salmon eggs.

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The human health impacts posed by GE salmon approval is also a pressing concern. One consequence of government approval of these GE salmon would likely be the use of even more antibiotics in the aquaculture operations used to raise the fish, increasing the threat of developing drug-resistant bacteria. Farmed salmon are given more antibiotics than any other livestock by weight, and GE salmon may require even more antibiotics, since AquaBounty’s fish would be less fit due to its constant production of growth hormone, making them even more susceptible to disease.

otherwise less fit organism result in gene spread and an ultimate weakening and eventual collapse of the species. Similarly, another study published by the Canadian government in 2004 showed that natural and GE salmon located together in the laboratory under conditions of low food availability led to population collapse and eventual extinction of the entire study population because GE salmon are more aggressive and sometimes resort to cannibalism. The effect that hungry and aggressive GE salmon could have on natural ecosystems and local

In addition, scientists have raised concerns about the fact that the physical properties of GE animals—such as jaw erosion, tissue inflammation, high levels of growth hormones and low levels of healthy fatty acids—could make them unsafe to eat. However, neither AquaBounty nor the FDA has made the transgenic fish available to independent experts for safety testing. Without such testing, it is irresponsible for the FDA to say these fish are safe to eat.

GE fish are not a problem for the US alone. As mentioned, AquaBounty will be exporting its environmental risks to Canada and Panama for their initial operation. It then plans to expand with grow-out facilities near cities around the world.

More plans

Additionally, salmon are just the beginning. AquaBounty also has plans to seek approval of GE tilapia, rainbow trout and arctic char that have

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A rally organized by Friends of the Earth US, the Centre for Food Safety, Food & Water Watch, and Ben & Jerry’s Ice Cream, which demanded that GE salmon be not approved

combined traits for supposed faster growth and tolerance to cold and disease.

The rise of GE fish would mean a further rise of industrial fish farming and the decline of family fisherfolk and fishing communities around the world. The traits being engineered into these fish are not 'public good' traits such as improved nutrition or decreased environmental impact.

On the contrary, the traits AquaBounty is selecting for GE salmon are meant to boost the company's profits and will lead to a further industrialization of the fishing industry.

Faster-growing, cold-tolerant and disease-resistant GE fish only make sense at the industrial scale. It allows for more fish to be crammed into cages or nets and AquaBounty can charge more for their roe and walk away with the profits while the environmental harms are exported to other communities.

Unsurprisingly, these GE fish are patented and owned solely by AquaBounty. Fish farmers could buy eggs from the company, but they would not own the fish or their traits any more than a corn farmer owns her crops grown from seeds bought from Monsanto.

What happens when these GE fish escape and mate with, or displace, wild populations? If the analogy to crop patents holds true, AquaBounty would own any fish that escape into open oceans or any of their offspring. They could also sue fishers for patent infringement if they happen to catch these fish out in the wild or accidentally breed them.

Fortunately, a final decision by the FDA has not yet been made, and citizens are rising up to pressure the FDA to reject the approval of AquaBounty's GE salmon. The FDA received 171,645 comments from the US public demanding that this fish not be approved for human consumption. Letters signed by over 300 environmental and public health organizations, chefs, restaurants and tribal communities were submitted to the FDA, asking that it deny approval of this GE salmon.

Act Now !

Call or write the FDA today using the contact information below and tell them the world says "No!" to GE salmon!

FDA's Center for Veterinary Medicine
Phone: 240-276-9300
Email: AskCVM@fda.hhs.gov

Address:

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United States of America

A rally organized by Friends of the Earth US, the Centre for Food Safety, Food & Water Watch, and Ben & Jerry's Ice Cream was held outside the White House demanding that President Barack Obama tell his administration not to approve this dangerous fish.

AquaBounty's salmon would be the first GE animal approved for human consumption anywhere in the world and would set a terrible precedent. Not only does AquaBounty have other GE fish in the works, there are also other corporations working with GE animals, such as GE pigs with less phosphorus in their waste or cows engineered to be immune to mad cow disease, which are waiting to move forward with their proposed GE animals based on what happens with AquaBounty's GE salmon application.

The FDA needs to hear from fishing communities around the world who would be affected by a fishing industry dominated by GE and other expensive, unproven, untested and unregulated technologies.

Governments around the world must make it clear that it is inappropriate and irresponsible for the US government to approve GE salmon for consumption in the US while exporting the environmental harms to other countries, and that those governments will not allow these GE fish operations to threaten their wild fish populations or farming communities. †

For more



www.salmonnation.com/fish/gefish.html
GE Salmon

www.aquabounty.com
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[www.fda.gov/NewsEvents/
PublicHealthFocus/ucm224089.htm](http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm224089.htm)
**Public Meetings on Genetically
Engineered Atlantic Salmon**