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## CRISPR fish: suspected 'torture' breeding

Super muscly red sea bream to be sold in Japan

1 November 2021 / Plans have been announced in Japan to begin marketing red sea bream genetically engineered (GE) with CRISPR/Cas. The gene editing tool was used in the fish to block gene functions which regulate muscle growth. As a result, the fish not only grow more muscle, they also have a larger-sized body, reduced body length and abnormal positioning of the vertebrae. In comparison to the wild type, the fish gains weight faster and appears to move more slowly.

No data were made available on the effects of the genetic alteration on life span or health in general. There also appears to be no data available on animal welfare. In addition, questions about changes in the composition of the edible parts of the GE fish and potential impact on consumers remain unanswered.

The genetic intervention performed on the fish was not precise: from many hundreds of GE fish, only those were selected which seemed suitable for further breeding. The targeted gene sites showed differing alterations and, in many cases, the genes were altered in some organs but not in all cells of the body.

It appears that the development of the modified fish is mostly driven by an interest in commercial profit: the scientists assume that the cost of feeding the GE fish that are reared in special containers, can be lowered. The scientists involved in the project are also named in patent applications for the use of gene scissor applications in fish. A Japanese company is currently planning to start marketing the fish.

CRISPR tomatoes are already allowed for marketing in Japan. The tomatoes are said to reduce blood pressure. However, neither the fish nor the tomatoes underwent detailed risk assessment: the Japanese authorities are simply assuming that no specific risks are attached to GE organisms as long as no additional genes are inserted. This assumption ignores the fact that gene scissor interventions can result in highly complex genetic changes simply by blocking natural gene functions. In addition, the processes of genetic engineering can cause unintended side effects and other genetic alterations.

The risk potential of organisms developed with New GE may actually exceed that of the previous transgenic organisms. This also appears to be true for fish: transgenic salmon sold in Canada and US show enhanced growth but do not seem to be affected by skeletal disorders.

Testbiotech is warning that the current plans of the EU Commission to deregulate New GE may cause similar misdirected developments such as those in Japan. As a result, more and more products from genetically engineered plants and animals could be placed on the market without prior risk assessment, and could also be questionable from an ethical perspective.

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**Further information:** [Publication on the CRISPR fish](#) [2]

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