

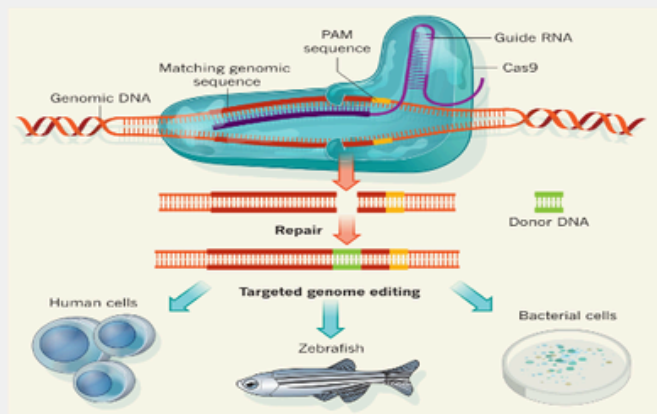
REFERENCE

GENOME/GENE EDITING

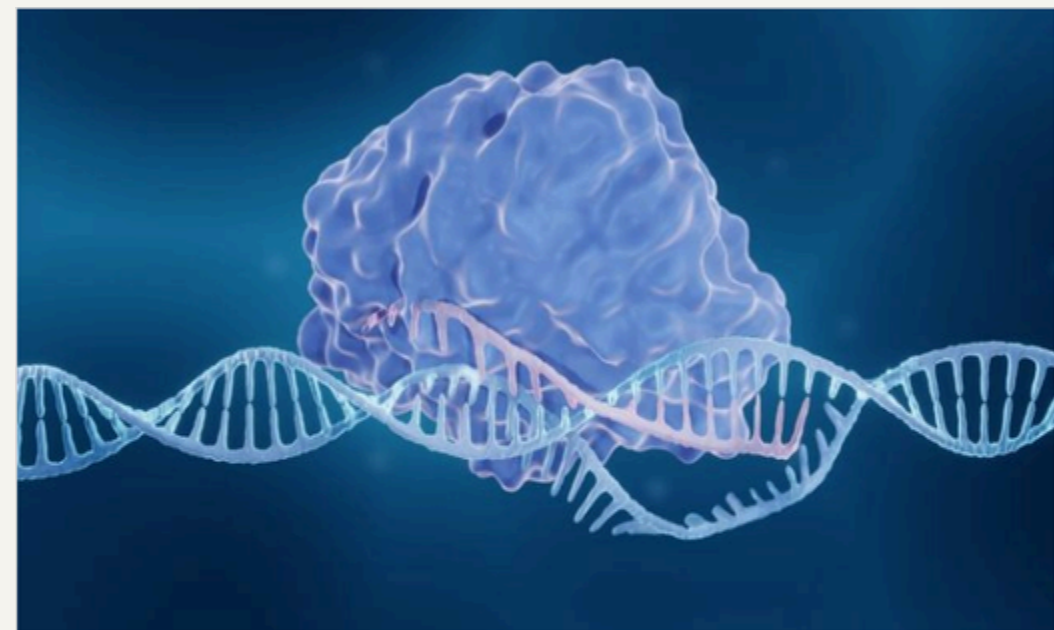
Gene editing

CRISPR/Cas9

The bacteria and archaea adaptive immune systems clustered regularly interspaced short palindromic repeats (CRISPR)/Cas have been modified and engineered to efficiently, conveniently and precisely edit genomes in various cells and species both in and ex vivo. The gene editing toolkit is composed of two elements: the CRISPR associated protein (Cas9) and the guide RNA (gRNA). The guide RNA together with the genome matching sequence locate Cas9 nuclease to the target site demarcated by conserved sequences called proto-spacer adjacent motifs (PAMs). Under physiological conditions in bacteria and archaea, the exogenous phage genomes or plasmids that contain the target DNA sequences are cleaved and subjected to degradation. While the engineered systems create site-specific double-stranded DNA breaks, which are then repaired either by homologous recombination or by non-homologous end joining.



Targeted genome editing with RNA-guided Cas9. (Reverting a genome. NEWS & VIEWS, Nature)



Types of genome edits

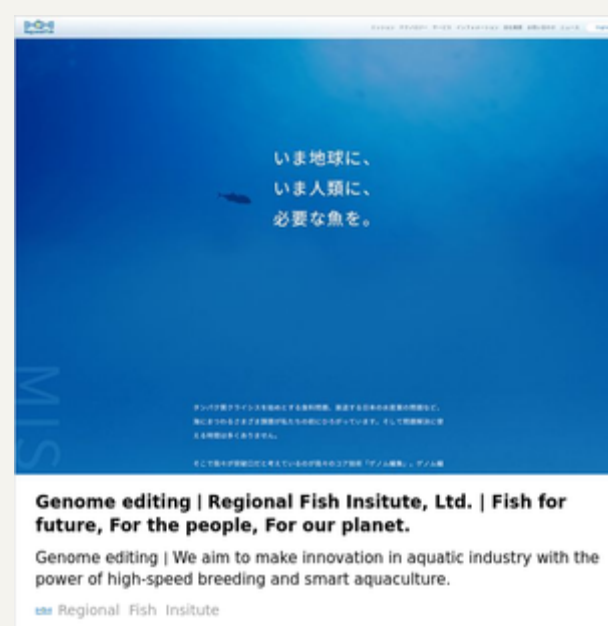
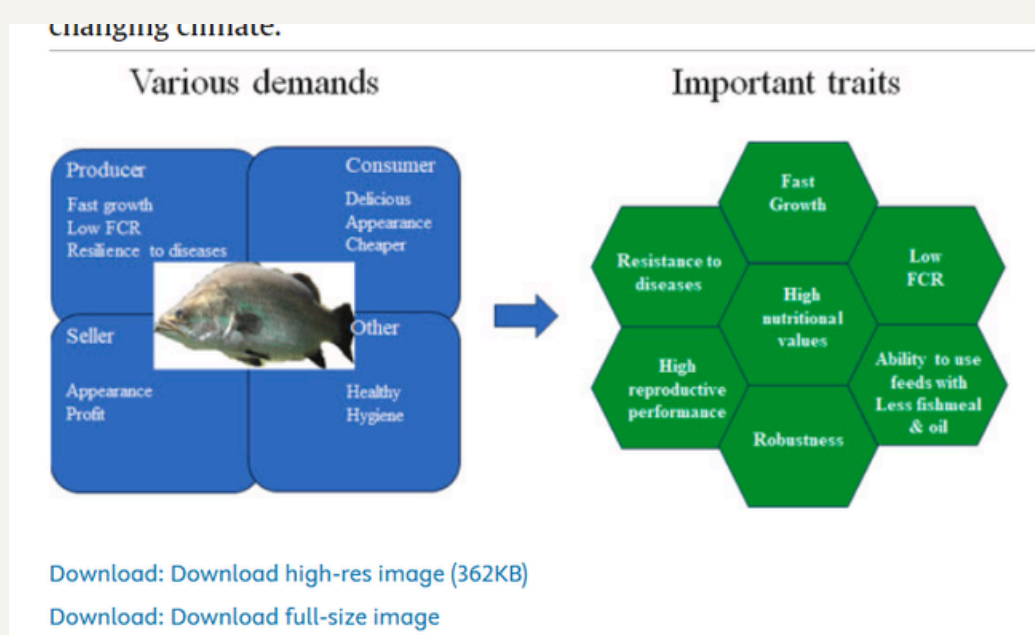
Genome editing is used to change the characteristics of a cell or organism, by making specific changes to its DNA.

 yourgenome

https://www.brainvta.tech/plus/view_product.php?aid=42

<https://www.yourgenome.org/the-me/types-of-genome-edits/>

WHY EDITING FISH GENOME ?



<https://www.sciencedirect.com/science/article/pii/S2468550X24000820>

<https://regional.fish/en/genome/>

<https://www.centerforfoodsafety.org/issues/309/ge-fish/about-ge-fish>

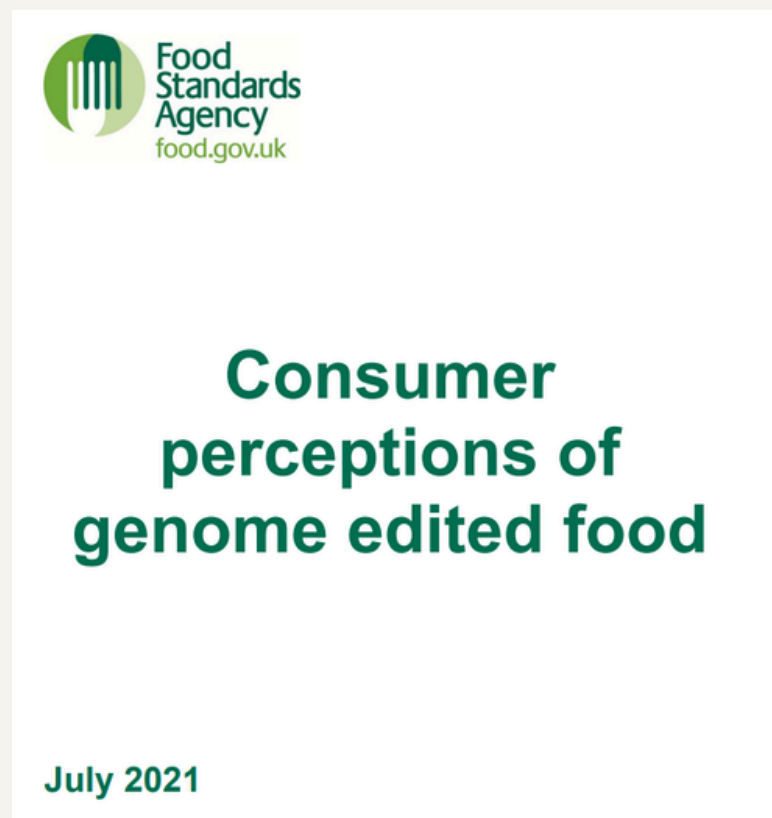


<https://www.isaaa.org/blog/entry/default.asp?BlogDate=1/19/2022>



<https://thefishsite.com/articles/why-gene-editing-can-help-aquaculture-enhance-global-food-security>

VIEWS AND CONCERNS ABOUT GENOME EDITED FOOD



<https://www.food.gov.uk/sites/default/files/media/document/consumer-perceptions-of-genome-edited-food.pdf>

AFFECT TO HUMAN HEALTH



Pros and cons of GMO foods: Health and environment
There are various pros and cons of genetically modified foods (GMOs). Learn what the research says about the effects of GMO foods on human health and the environment.
medicalnewstoday.com / Feb 28, 2019

<https://www.medicalnewstoday.com/articles/324576#cons>



What is gene-edited food and is it safe to eat?
Gene-edited food can now be developed and sold in England, but not in the rest of the UK.
BBC News / Mar 23, 2023

<https://www.bbc.com/news/science-environment-64559210>

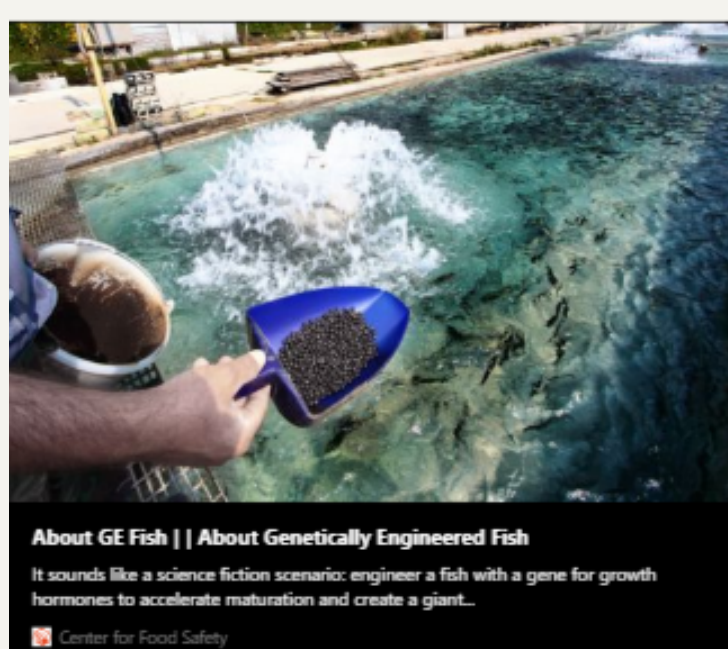


<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3791249/>



Do GMOs harm health?
Interview with Dr. Peter Goldsbrough, Professor of Botany and Plant Pathology at Purdue University
Purdue University

<https://ag.purdue.edu/gmos/gmos-health.html>



About GE Fish | About Genetically Engineered Fish
It sounds like a science fiction scenario: engineer a fish with a gene for growth hormones to accelerate maturation and create a giant...
Center for Food Safety

<https://www.centerforfoodsafety.org/issues/309/ge-fish/about-ge-fish>