# Article information:

High-efficiency TALEN-based gene editing produces disease-resistant rice | Nature Biotechnology
<https://www.nature.com/articles/nbt.2199>

# Article summary:

1. Researchers used TALEN technology to edit a specific S gene in rice to create disease-resistant plants.

2. The TALENs were designed to target overlapping elements in the Os11N3 promoter and induce mutations that interfere with the virulence function of AvrXa7 and PthXo3.

3. Tests showed that the modified plants were resistant to infection by pathogenic Xoo strains, and heritability tests confirmed that the mutations were passed on to subsequent generations.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article is generally reliable and trustworthy, as it provides detailed information about the research methods used, including descriptions of the TALENs deployed, the transformation experiments conducted, and the genotyping and bacterial infection assays performed. The results are also clearly presented, with figures illustrating the mutations induced by TALEN pair 1 and pair 2 genes, as well as expression levels of Os11N3 and Os04g19960 in different genotypes of plants. Furthermore, heritability tests were conducted to confirm that the mutations were passed on to subsequent generations.

However, there are some potential biases in the article which should be noted. For example, while it is mentioned that 32 out of 40 Xoo strains collected worldwide induce Os11N3 gene expression, no further details are provided about these strains or their geographical locations. Additionally, while it is stated that polymorphisms in Os11N3 have not been identified in rice germplasm which confer resistance to bacterial blight, no evidence is provided for this claim or any exploration into why this might be so. Finally, while it is mentioned that further sequencing will be needed to conclusively demonstrate that all transgene fragments have been removed from genetically modified rice lacking any selection marker or TALEN gene, no further details are provided about how this will be done or what implications this may have for future research into gene modification-based crop improvement.

# Topics for further research:

* Bacterial blight resistance in rice
* Polymorphisms in Os11N3 gene
* Geographical distribution of Xoo strains
* Sequencing of transgene fragments
* Selection marker-free genetically modified rice
* Gene modification-based crop improvement

# Report location:

<https://www.fullpicture.app/item/2abda61248a71a7f9f5f5b8acd9cb8de>