

Researchers in Japan uncover genes can protect crops from flood

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Researchers from Japan are getting closer to identifying the molecular processes underlying how floods deprive plants of oxygen and how to engineer hardier crops.

The team from Hiroshima University's [Graduate School of Integrated Sciences for Life](#) uncovered several common genes and their related mechanisms in rice (*Oryza sativa*) and thale cress (*Arabidopsis thaliana*).

"Hypoxia is an abiotic stress for plants often caused by flooding," said first author Keita Tamura, referring to the oxygen deprivation caused by oversaturation. "Although many studies have been performed previously, we thought hidden biological mechanisms might be found by analysing multiple studies through a meta-analysis of publicly available data."

The researchers identified 29 pairs of RNA-sequencing data for thale cress and 26 pairs for rice for the plants in both normal oxygen and oxygen-deprived states from the available datasets. RNA-sequencing involves transcribing the genetic blueprints of the subject in a specific moment, meaning the data can be used to investigate which genes triggered which changes, according to corresponding author Professor [Hidemasa Bono](#).

"Our meta-analysis suggests distinct molecular mechanisms under hypoxia in plants and animals," Bono said. "The candidate genes identified in this study are expected to elucidate novel molecular mechanisms of hypoxia responses in plants. Ultimately, we plan to manipulate one of the candidate genes through genome editing technology to create flood-

tolerant plants.â?•