Gene required for plant growth at warmer temperatures discovered

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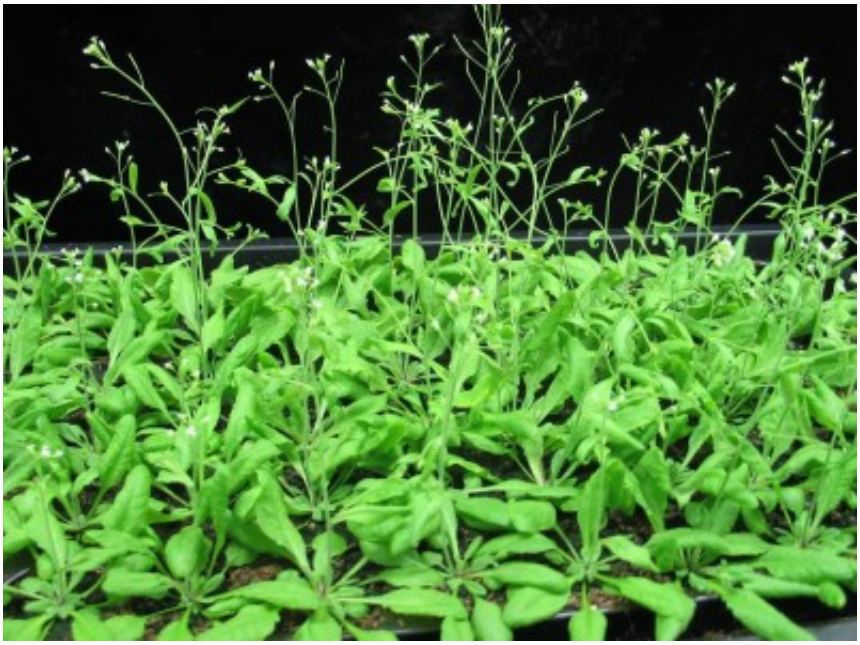

Arabidopsis thaliana

Researchers have discovered a new gene that enables plants to regulate their growth in different temperatures.

Published in *PLoS Genetics*, the finding could lead to new ways of optimising plant growth when it comes to climate change.

Associate Professor Sureshkumar Balasubramanian, from Monash University, along with colleagues in Spain, made the discovery after

analysing natural populations of the model plant Arabidopsis thaliana, commonly known as thale cress.

"Plants are highly sensitive to environmental changes and even small changes in temperature impact on their growth," he said.

"We were surprised to find that some populations of Arabidopsis simply would not grow when the temperatures increased as little as 3-4 ºC."

The researchers set out to find the genes responsible for this growth defect and after years of work, they were able to discover the underlying gene, which they refer to as ICARUS1, reflecting the temperature sensitivity conferred by the gene.

"With increasing average temperatures across the globe being predicted to have negative impacts on agricultural productivity, it is important to understand more about how plants regulate their growth," said Associate Professor Balasubramanian, School of Biological Sciences, which was also echoed by Dr Carlos Alonso Blanco, who co-lead the investigation at National Center of Biotechnology (CSIC) from Spain.

Plants that carried a defective ICARUS1 gene stopped growing when the temperature reached hot levels, and continued growing when it cooled down again.

"This allows us to envisage novel ways and mechanisms through which plant growth can be optimised," Associate Professor Balasubramanian said.

"Interestingly, Arabidopsis isn't the only plant to have this gene, it is also found in nearly all other organisms, which suggests that our findings can be explored in crops."

The researchers said the findings provided insights into how plants modulate their growth, and could lead to scientists designing plants that could withstand elevated temperatures.

More information: "Natural Variation Identifies ICARUS1, a Universal Gene Required for Cell Proliferation and Growth at High Temperatures in Arabidopsis thaliana." *PLoS Genet* 11(5): e1005085. DOI: 10.1371/journal.pgen.1005085

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