

Proper flower and leaf development tied to the same gene

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(PhysOrg.com) -- A group of Dartmouth researchers have discovered a new role for an important plant gene. Dartmouth Biology Professor Tom Jack and his colleagues have learned that a gene regulator called miR319a (micro RNA 319a) is important for proper flower development, particularly the development of petals.

“In my lab, we are particularly interested in genes that are necessary for the petals and stamens in the flower to develop properly,” says Jack. “We isolated a mutant plant that had defects in petal development, and we then went on to identify the gene that was defective in the mutant plant, which turned out to be miR319a, which had previously, through the work of others, been implicated in leaf development.”

The researchers then found that one of the targets of miR319a is a gene called TCP4, one of many similar genes that functions in leaves and flowers to control cell growth and proliferation.

The study was published Dec. 29, 2009, in the journal [Proceedings of the National Academy of Sciences](#), and Jack’s co-authors on the study are Anwesha Nag and Stacey King, a graduate student and research technician, respectively, at Dartmouth.

When the petals or flowers of [plants](#) don’t grow properly, they risk not being able to reproduce. In other words, they don’t attract pollinators.

“[Flowers](#) are very important to humans because most plant food products are derived from fruits and seeds which are produced by the flower,”

says Jack.

Jack's lab will continue to investigate the genetic pathways controlled by miR319a and TCP4. "Addressing how these genes control petal size and shape is one of the goals of our future research.," says Jack.

More information: www.pnas.org/

Provided by Dartmouth College

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