

KISS ME DEADLY proteins may help improve crop yields

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Dartmouth College researchers have identified a new regulator for plant hormone signaling—the KISS ME DEADLY family of proteins (KMDs) – that may help to improve production of fruits, vegetables and grains.

The study's results will be published the week of May 27 in the journal *Proceedings of the National Academy of Sciences*.

Professor G. Eric Schaller, the paper's senior author, studies the [molecular mechanisms](#) by which a plant recognizes a hormone and then responds to it. Among the hormones he studies are "anti-aging" cytokinins, which play critical roles in regulating plant growth and development, including stimulating yield, greening, branching, metabolism and cell division. Cytokinins are used in agriculture for multiple purposes, from crops to golf course greens.

In their *PNAS* paper, the researchers identify KMDs as a new regulator for cytokinin signaling. To regulate plant growth, plants need to perceive cytokinins and convert this information into changes in gene expression. The KMDs target a key group of cytokinin-regulated [transcription factors](#) for destruction, thereby regulating the [gene expression changes](#) that occur in response to cytokinin. In other words, increases in KMD levels result in a decreased cytokinin response (or less crop growth), while decreases in KMD levels result in a heightened cytokinin response (or greater crop growth).

The results suggest that KMDs represent a natural means by which plants

can regulate the cytokinin response and may serve as a method to help regulate agriculturally important cytokinin responses.

"We expect that a better understanding of cytokinin activity and KMDs could lead to improved [agricultural productivity](#)," said Schaller.

More information: SCF^{KMD} controls cytokinin signaling by regulating the degradation of type-B response regulators, www.pnas.org/cgi/doi/10.1073/pnas.1300403110

Provided by Dartmouth College

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