

Public Abstract

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Graduation Term:SP 2013

Department:Biological Sciences

Degree:PhD

Title:GENETICS AND FUNCTIONAL GENOMICS OF ABSCISSION

The iconic shedding of leaves by trees every fall or the drop of an apple are forms of abscission. This is a process by which plants discard organs in response to environmental effects or the normal developmental plan. The model plant *Arabidopsis thaliana*, which only abscises its floral organs, has been used extensively to understand the molecular and genetic basis of abscission. Previously work has shown that this is regulated multiple genes that form a signaling pathway. Two key genes in this signaling pathway are the receptor-like protein kinases HAESA (HAE) and HAESA-LIKE 2 (HSL2). This work furthers knowledge of this pathway and regulation by HAE and HSL2. Mutagenesis techniques were used to disrupt normal gene function in *Arabidopsis* plants, which were then examined for their effect on abscission. Measuring and comparing the expression of genes in normal plants and *hae hsl2* mutants identified targets of HAE HSL2-signaling. Comparison to other gene expression data sets showed processes that occur during abscission that are independent of the HAE HSL2-signaling pathway. Using this data, new candidate genes have been identified that will be tested for their involvement in abscission.