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Title: "The AP2/ERF-domain transcription factor ORA47 regulates jasmonate biosynthesis genes in Arabidopsis"

Abstract;

Jasmonic acid (JA) and its cyclic precursors and derivatives, collectively referred to as jasmonates (JAs), constitute a family of bioactive oxylipins that regulate plant responses to wounding, herbivory and pathogen infection. The expression of several genes encoding JA biosynthesis enzymes is increased by JA, indicating that JA biosynthesis is subject to auto-induction. We identified that the AP2/ERF-domain transcription factor ORA47 regulates jasmonate biosynthesis pathway. Overexpression of ORA47 gene conferred JA-sensitive phenotype, such as inhibition of growth and induced the expression of all biosynthetic genes of the JA pathway tested. In addition the mechanism of JA-responsive expression of a small gene family in Arabidopsis encoding a key enzyme in JA biosynthesis, allene oxide cyclase (AOC) was studied. A GCC-like box in the AOC2 promoter interacted specifically with ORA47 in vitro and in vivo conditions and this GCC box is crucial for ORA47 mediated activity of the AOC2 promoter. Chromatin immunoprecipitation (ChIP) analysis showed most conclusively that AOC2 gene is direct target gene of ORA47.