



ABSTRACT

"Jasmonates : Gatekeepers of the plant's defense metabolite universe"

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Across the plant kingdom, the jasmonate hormone steers the delicate balance between growth and the activation of defence programs, such as the production of bioactive secondary metabolites. The signaling machinery that established the function of jasmonates as regulators of (secondary) metabolism is conserved and installed early in the higher plant lineage. But, in spite of the similarities of many of the regulators, ultimately species-specific secondary metabolic pathways have evolved under jasmonate control.

By using cutting-edge functional genomics tools, in combination with reverse genetics screenings, we try to identify the essential components acting in the jasmonate signalling network, in medicinal plants and in the model plant *Arabidopsis thaliana*. Such components can ultimately lead to the creation of new metabolic engineering tools that may improve the exploitation of the plant metabolic machinery. Surprisingly, the screens that we have performed not only allowed identifying positive regulators of jasmonate elicitation of metabolism but also revealed the existence of multiple 'safety breaks' that serve to optimize plant survival under stress conditions.