

# MPMI ALD1 Regulates Basal Immune Components and Early Inducible Defense Responses in *Arabidopsis*

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## Background

- Plant innate immunity has several mechanisms that enable the recognition of microorganisms through different types of immune receptors
- We address the role of ALD1 in mediating defense amplification as well as the levels and responses of basal defense machinery in plant immunity.

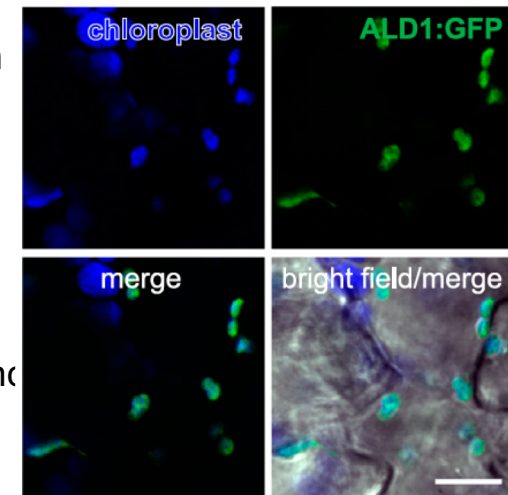
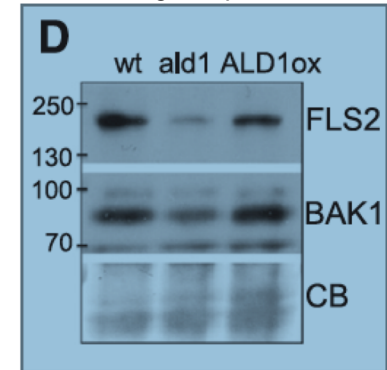
## Science

- Transgenic *Arabidopsis* plants were produced that overexpressed ALD1 and resistance levels to virulent *P. syringae* increased.
- During basal state conditions, very rapid defense responses to PAMP flg22 (reactive oxygen species (ROS) burst) was observed in these plants when compared to WT, therefore, ALD1 controls microbial-associated molecular pattern (MAMP) receptor levels and responsiveness.
- Pipecolic acid (Pip), an ALD1-dependent product, which allows for pathogen-induced salicylic acid (SA) accumulation, did not confer increased flg22 responses to WT or over-expressing ALD1 plants, however exudates from these plants could confer disease resistance.

## Significance

- Salicylic acid (SA), a central player for defense induction and important for resistance to virulent *P. syringae*, is regulated by ALD1.
- ALD1 localizes to the chloroplast, which has a great impact in defense metabolic pathways.
- ALD1 affects earlier defense events than were previously described, therefore, the metabolites produced by ALD1 affect basal and early defenses, which may be more beneficial to the plant's innate immunity.

Basal FLS2 and BAK1 levels in total extracts of transgenic plants.



ALD1 localization in chloroplasts