

***Pseudomonas fluorescens* Induces Strain-Dependent and Strain-Independent Host Plant Responses in Defense Networks, Primary Metabolism, Photosynthesis, and Fitness**

Contact: David Weston (865)241-8323, westondj@ornl.gov

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Background

- The root-rhizosphere harbors numerous microbial associates that shape host plant performance. The mechanisms mediating these interactions are largely unknown.

Science

- Using *Arabidopsis* plants as a model, *Populus deltoides* bacterial isolate GM30 was found to be a plant-growth-promoting rhizobacterium (PGPR) increasing lateral root growth and protecting the plant host against disease.
- Root colonization of *Arabidopsis* by GM30 elicits a systemic defensive response that was elucidated by network modeling of gene expression and metabolite pathway analysis.

Significance

- This work identifies a specific gene network driving the systemic response in plant-PGPR interactions.
- This work also provides a baseline network for understanding the roles of multiple microbial associates and host plant genotypes.

Resulting Plant Phenotype



Control GM-30



8.08 (1.03)

1.08 (0.64)

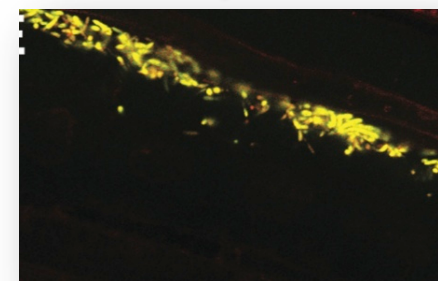
Control

GM-30

Numbers are lesions per plant and (SE) after pathogen challenge



**Host plant metabolism
(network modeling & physiology)**



GM30 associated with plant root

Weston et al., (Accepted for publication). *Molecular Plant-Microbe Interactions*, Vol. 25, doi:10.1094/MPMI -09-11-0253