Title Effects of jasmonic acid, ethylene, and salicylic acid signaling on the rhizosphere bacterial community of *Arabidopsis thaliana*

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Abstract

Systemically induced resistance is a promising strategy to control plant diseases, as it affects numerous pathogens. However, since induced resistance reduces one or both growth and activity of plant pathogens, the indigenous microflora may also be affected by an enhanced defensive state of the plant. The aim of this study was to elucidate how much the bacterial rhizosphere microflora of *Arabidopsis* is affected by induced systemic resistance (ISR) or systemic acquired resistance (SAR). Therefore, the bacterial microflora of wild-type plants and plants affected in their defense signaling was compared. Additionally, ISR was induced by application of methyl jasmonate and SAR by treatment with salicylic acid or benzothiadiazole. As a comparative model, we also used wild type and ethylene-insensitive tobacco. Some of the *Arabidopsis* genotypes affected in defense signaling showed altered numbers of culturable bacteria in their rhizospheres; however, effects were dependent on soil type. Effects of plant genotype on rhizosphere bacterial community structure could not be related to plant defense because chemical activation of ISR or SAR had no significant effects on density and structure of the rhizosphere bacterial community. These findings support the notion that control of plant diseases by elicitation of systemic resistance will not significantly affect the resident soil bacterial microflora.