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PHYTOGLOBINS ROLE IN ARABIDOPSIS-*FUSARIUM OXYSPORUM* INTERACTION

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Plants, as sessile organisms, are exposed to different environmental factors. During evolution, plants have developed different resistance mechanisms against biotic and abiotic stress. Reactive oxygen and nitrogen species (ROS/RNS) accumulation may produce severe damages in plants but also behave as signalling molecules in many physiological processes, including defence response during plant-pathogen interactions. Especially, it is well known that NO produced after plant recognition of pathogens is part of the signalling cascades that trigger the expression of defence genes, the production of secondary metabolites and finally, hypersensitive response (HR) and systemic acquired resistance (SAR; Bellin *et al*., 2013). In addition, phytoglobins are important key players regulating NO concentration protecting organisms from oxidative and nitrosative stress. Phytoglobins have been classified in symbiotic, nonsymbiotic and truncated phytoglobins. In response to pathogen, we focus on nonsymbiotic phytoglobins that are divided into two classes (Perazzolli *et al*., 2004). Nevertheless, the NO and phytoglobins role has not been elucidated during disease resistance in root fungal-plant interactions. Root-colonizing fungi *Fusarium oxysporum*, causes vascular wilt disease, that leads to devastating yield losses. The eradication is very tough, due to its persistence and colonizing capacity (Turrá *et al*., 2016).

In order to understand the role of nonsymbiotic phytoglobin 1 (ns-Hb1) on NO signalling, in this work, we study the response of a model plant *Arabidopsis thaliana*, wild type and plants altered in the expression of *ns-Hb1*, to *F. oxysporum*. We have analysed plant survival and defence gene expression among others. From this study, we have hypothesized possible roles of NO and phytoglobins in the plant-pathogen interaction.

Bellin, et al., (2013) Mol. Plant. Microbe. Interact., 26 (3), 271–7
Perazzolli et al., (2004) The Plant Cell, 16: 2785-2794
Turrá et al., (2016) Seminars in Cell & Developmental Biology, 57: 69-75

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