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# **In vitro effects of invasive and native fungal pathogens on gene expression of an ectomycorrhizal fungus**

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# UNIVERSITÀ DEGLI STUDI DI TORINO

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**IN VITRO EFFECTS OF INVASIVE AND NATIVE FUNGAL PATHOGENS ON GENE EXPRESSION OF AN ECTOMYCORRHIZAL FUNGUS. E. Zampieri, F. Sillò, L. Giordano<sup>1</sup>, J.V. Colpaert<sup>2</sup>, R. Balestrinis, P. Gonthier<sup>1</sup>.**

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Non-native invasive organisms stand among the main elements of global change and are playing a role in the biodiversity loss, ecosystem degradation, and impairment of ecosystem services. The effects of biological invasions have been extensively investigated in terms of environmental, economic, and human health impacts. However, little is known on the consequences that non-native plant pathogens may cause on host plant symbionts, such as ectomycorrhizal (ECM) fungi. In this work, we tested the hypothesis that non-native invasive fungal pathogen may have greater effects on ectomycorrhizal fungi than native fungal pathogens using *Heterobasidion irregulare*/H. annosum and the ECM fungus *Suillus luteus* as a model system. Secondly, the effects of the symbiont on the pathogens were also investigated in dual culture by expression analyses on putative cell wall related genes. The up- and downregulated genes both in the symbiont and in the pathogens confirmed the rewiring of the transcriptional machinery related to cell wall hydrolytic enzymes and hydrophobins, putatively involved in the fungus-fungus interaction. Despite it was not possible to distinguish the effects of the invasive pathogen from that of the native one on the ECM fungus from a wide gene expression perspective, a single *S. luteus* gene encoding a putative chitinase was found to differentially perceive the two pathogens, thus showing a diverse expression trend.