Do we really know orchid symbionts' behavior?

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The basidiomycete *T. calospora* (Boud.) Juel is generally regarded as an unspecialized soil saprotroph when it is not in association with orchid hosts. However, a recent survey on the fine-scale spatial distribution of orchid mycorrhizal fungi in two orchid-rich Mediterranean grassland soils investigates this aspect (Voyron *et al*., 2017). In this study we took a qPCR approach targeting the expression level of different carbohydrate-active enzymes (CAZymes), to address the actual saprotrophic abilities of this fungus under different conditions such as free living mycelium on oat-agar medium, free living on liquid modified Melin-Norkrans deprived of any source of C but enriched with amino acids, free living on sterilized litter, symbiont in orchid (*Cattleya purpurata* (Lindl. & Paxton) Rollisson ex Lindl.) roots, and an apparent saprotrophic condition in dead protocorms. The most interesting genes, among the more representative CAZyme families, were selected from a previously obtained transcriptome (Kohler *et al*., 2015). After RNA extractions and processing, RT-qPCR has been performed and results suggest that CAZymes expression may actually follow orchid living-cycle and that *T. calospora* may actually just have an occasional weak saprotrophic activity during orchid estivation.

Kohler A., Kuo A., Nagy L.G., Morin E., Barry K.W., Buscot F., … Martin F. 2015. Convergent losses of decay mechanisms and rapid turnover of symbiosis genes in mycorrhizal mutualists. *Nature Genet.*, 47: 410-415.

Voyron S., Ercole E., Ghignone G., Perotto S., Girlanda M. 2017. Fine-scale spatial distribution of orchid mycorrhizal fungi in the soil of host-rich grasslands. *New Phytol.*, 213: 1428-1439.