



TERPECM

Deciphering the role of plant terpenes in the modulation of ectomycorrhizal symbiosis

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Summary —

Mutualistic interactions between trees and ectomycorrhizal (ECM) fungi are one of the most common and important beneficial inter-kingdom interactions for tree fitness in boreal forests. Despite the great importance of it, there are still gaps in knowledge about the signalling mechanisms used by both trees and ECM fungi to communicate and establish mycorrhizal symbiosis. Latest research has put emphasis on fungal small-secreted-proteins acting as effectors for the proper establishment of ECM symbiosis. The role of – at least - one of these effectors in dampening the plant Jasmonate pathway and in the subsequent downstream gene regulation, ultimately points towards the importance of terpene biosynthesis in the modulation of ECM establishment. For this purpose, **we aim to decipher the link between Jasmonate-signaling and plant terpenes as well as their role in ECM symbiosis**. First, we will **characterize the terpene emission profile or “terpenome” of *in vitro* wild type poplar plants establishing ECM with *Laccaria bicolor*** along a time-course, combine with the monitoring of terpene-synthase gene expression. Secondly, we will test **how the terpenome is affected by performing interaction with mutant lines that directly or indirectly affect the Jasmonate signaling pathway**. The outcome of this project will allow to **gain more insight into the molecular dialogue between trees and ECM fungi** and the anticipated results will establish the basis of research of new actors in the ECM landscape: plant terpenes.