Phosphate unloading in ectomycorrhizae: why is the HcPT2 transporter of Hebeloma cylindrosporum a good candidate?
Claude Plassard, Adeline Becquer, Kevin Garcia, Laurie Amenc, Jeanne Dore, Gilles Gay, Sabine Zimmermann

To cite this version:
Claude Plassard, Adeline Becquer, Kevin Garcia, Laurie Amenc, Jeanne Dore, et al.. Phosphate unloading in ectomycorrhizae: why is the HcPT2 transporter of Hebeloma cylindrosporum a good candidate?. 9. International Conference on Mycorrhiza (ICOM9), Jul 2017, Prague, Czech Republic. 2017. hal-02154442

HAL Id: hal-02154442
https://hal.science/hal-02154442
Submitted on 2 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.
Oral communication at the 9th International Conference on Mycorrhiza (ICOM 9), 30 07 / 04 08 2017-Prague, Czech Republik.

Phosphate unloading in ectomycorrhizae: why is the HcPT2 transporter of *Hebeloma cylindrosporum* a good candidate?


It is well known that ectomycorrhizal (ECM) fungi improve the growth of their hosts by providing growth-limiting nutrients and particularly inorganic phosphate (Pi). However, the molecular players driving the Pi allocation from the fungus to the host are largely unknown thus far. In the ECM association between *Pinus pinaster* and *Hebeloma cylindrosporum*, we hypothesized that one of the three Pi transporters identified in the fungal genome (named HcPT1.1, HcPT1.2 and HcPT2) could be more specifically involved in Pi unloading in the Hartig net. To address this hypothesis, we combined microscopy, physiology and fungal genetic approaches to unravel the role of each Pi transporter. Immuno-localization of Pi transporter proteins showed that only HcPT1.1 and HcPT2 are localized in the Hartig net, indicating that these two proteins could play a role in Pi efflux in the ECM. We produced transgenic lines, either down- (RNAi) or over- (OE) expressing one of the two proteins. We used them to measure *in vitro* Pi fluxes as well as P accumulation in young *P. pinaster* seedlings. Our experiments showed that only OE-PT2 lines were able to increase *in vitro* Pi effluxes and shoot P accumulation of pine seedlings whereas the OE-PT1.1 lines increased only root P accumulation. Taken as a whole, these results support that the HcPT2 Pi transporter is a key component of the fungal Pi unloading machinery in the Hartig net of ECM.