

## Genomics and Systems Biology and Emerging Technologies

### P-153 - SELECTION AND ACCLIMATIZATION OF STRAINS OF EDIBLE MYCORRHIZAL FUNGI FOR IMPROVED FIELD PERSISTENCE

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#### Background

The influence of environmental factors in the diversity of ectomycorrhizal (ECM) species has been shown however the response of ECM fungi to climate variation is poorly understood. Although it has been shown that some ECM fungi have the ability to acclimate to certain abiotic conditions, this may vary amongst strains due to different evolutionary histories. The use of native strains with strong adaptive skills to different abiotic and biotic scenarios could be determinant for the success of the plantations and therefore research on this topic is urgent. The present work will focus on screening high performance strains of the edible species *Lactarius deliciosus* (L. del.) and assess its ability to adapt to abiotic stresses to ensure a more sustainable choice of isolates when aiming at the production of edible mushrooms.

#### Method

The ability of L. del. to acclimate to cold and hot temperatures was studied by analyzing the effects of exposure on growth and amino acid metabolism. Fungal plugs were taken from previously grown cultures, placed in fresh medium, on top of a cellophane sheet. They were grown for three weeks at 25°C and then subjected to different temperatures, namely 15°C, 20°C, 30°C and 35°C for 15 days. Progressive exposure was also tested for 15°C where the temperature was lowered at a lower rate. The permanence at 25°C was used as control. The expansion radius was measured every week for 6 weeks. The fungus was collected for metabolomic analysis.

#### Results & Conclusions

Among the different treatments, the highest growth was obtained at 25°C, and 35°C was lethal to the mycelium after 15 days of exposure. Temperatures of 15°C and 30°C were clearly stress temperatures to be considered in subsequent studies. L. del. isolate was shown not to be easily tamed regarding temperature. The fungus exposed to 15°C and 30°C for 15 days did not show any advantage when subcultured to that same temperature compared to those who had not been acclimated. These points will represent important and innovative contributions to the understanding of what triggers mycelium development and mushroom formation.

#### References & Acknowledgments

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Selection and acclimatization of strains of edible mycorrhizal fungi for improved field persistence