**biochemical detection of innate immunity induction and Transcriptomic response in lichens**

Christopher Tominello-Ramirez1,2,\*; Silke Werth1

1Ludwig-Maximilians-Universität München, Germany; 2Current address: Technische Universität München, Germany; \*E-mail: C.TominelloRamirez@campus.lmu.de

The comparatively young field of fungus-microbe interactions is rapidly expanding from its historically understudied circumstances. In the past five years, fungi have been observed to induce innate immunity in response to the detection of microbe-associated molecular patterns (MAMPs) and to induce a hyper-sensitive response upon NOD-Like Receptor (NLR) mediated detection of exogenous vesicle fusion in a strong display of congruence with the well-studied field of plant innate immunity. Still, there remain methodological challenges that contribute to the poor state of knowledge in this field, such as the continuing search for convenient and standardized biochemical assays to detect induced immunity as well as the limited availability of transcriptomic datasets. The aim of this study is to consider fungus-microbe interactions in lichens and to develop convenient and consistent biochemical assays for innate immunity induction of lichens of the genera *Lobaria* and *Peltigera*. Moreover, a transcriptomic dataset was generated to accompany the biochemical responses and illustrate key biological processes that occur when the lichens’ innate immunity is induced by specific elicitors. The lichens were shown to induce an oxidative burst in response to both MAMPs and damage-associated molecular patterns, as well as a clear disruption of the pH balance of the extracellular environment. Funding: SW (DFG).