

MWP – Young Researcher Abstract 2024

Project title: Breeding for Boundaries: Exploring candidate resistance genes to understand the formation of defensive barriers against decay pathogens in Norway spruce.	
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<p>Abstract (approx. 200 words): In Sweden, Norway spruce forest hold significant economic, cultural and recreational value. It is therefore worrisome that Norway spruce is particularly threatened by the increased stresses caused by global warming. One major stressor are the common and destructive pathogens <i>Heterobasidion annosum</i> s.l., which are expected to be favored by climate change. Artificial evolution through molecular breeding can be a crucial tool in aiding the adaption of resistance to these pathogens. However, efficient breeding requires understanding what genetic variation is associated with resistance to the pathogens.</p> <p>We have identified genetic variation associated with candidate resistance genes to <i>H. annosum</i> s.l. We hypothesize that specific alleles of selected candidate genes give a stronger defense response leading to increased resistance. To test this, various molecular methods will be used including resequencing of genes, transcriptomics, metabolomics and the generation of over expression transformants. By analyzing how variation in the genes affect defense we will generate novel knowledge about the molecular defense response and provide genetic markers for future breeding programs. Hopefully, this and similar research, along with efficient breeding strategies, will aid our forests in adapting to the rapidly increasing stresses posed by the changing climate.</p>	
Key words: Norway spruce, <i>Heterobasidion</i> , disease resistance, genetic variation, molecular defense response.	