

## QTL MAPPING OF *SPHAERULINA MUSIVA* CANKER RESISTANCE/SUSCEPTIBILITY IN A POPLAR T x D HYBRID POPULATION

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Poplar trees impact our ecological and economic well-being. Poplar hybrids benefit from heterosis, but the *P. trichocarpa* x *P. deltoides* (T x D) hybrid is very susceptible to infection by the fungal pathogen *Sphaerulina musiva*, which can cause premature mortality due to breakage or stem-girdling cankers. Breeding for resistance is currently the best technique for disease management. A prior Genome-Wide Association Study (GWAS) of *P. trichocarpa* found three genes that are thought to confer resistance (RLP1, RLP2, L-type lecRLK) and one gene that is thought to confer susceptibility (G-type lecRLK). A conidia-based greenhouse inoculation experiment was performed on T x D poplar hybrids using three isolates of *S. musiva*. Stem cankers were counted and disease severity scores (1–5) were assigned. The resulting phenotypes were analyzed using the R/qtl package with two models and a QTL map was created along with corresponding gene intervals. The four genes from the GWAS experiment were not found in the QTL gene intervals, nor were homologs found using BLAST analysis methods. Several candidate genes are listed and may be instrumental for further resistance breeding improvements.

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