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Characterization of R-QTL for *Ascochyta lentis* resistance in lentil and identification of candidate defense-transcripts

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Lentil (*Lens culinaris*) is a valuable staple food legume with an annual global production of ~5MT which is ubiquitously impacted by the disease *Ascochyta* blight, caused by the necrotrophic fungal pathogen, *Ascochyta lentis*. The most effective and environmental friendly method to control AB is use of resistant genotypes together with scheduled chemical applications. To breed sustainable resistance, knowledge on the key components underpinning the resistance trait is required. Accordingly, a large number of *Ascochyta lentis* defense-related transcripts were identified by RNA-sequencing in the highly resistant genotype ILL7537, which is routinely used in the Australian resistance breeding program. Subsequently, Genome-By-Sequencing (GBS) method was used to identify SNP markers and produce a comprehensive linkage map comprising of 1161 markers across 120 F5 RIL (ILL7537×ILL6002 cross). Disease resistance in the RIL population was assessed using four quantitative traits and three major quantitative trait loci governing the ILL7537 resistance were identified (R-QTL). Co-location of differentially expressed defense-related transcripts with SNPs within the identified R-QTL regions revealed a set of putative candidate resistance genes and associated transcription factors, for further investigation as the key drivers of the resistance trait.

Biography

Khorramdelazad Mahsa is a Doctoral student at Griffith University, Australia. Her PhD project is on "Identification of genes and molecular defense mechanisms of lentil (*Lens culinaris*) to *Aschochyta lentis* a necrotrophic fungus" in Professor Rebecca Ford's research group. She has been doing various genomics, molecular and plant pathology related studies for the last 10 years. She has lots of experiences on DNA and RNA extraction, PCR and RT-qPCR, gel electrophoresis both on agarose and polyacrylamide gels, RNA and DNA sequencing, Molecular markers, planting and sub-culturing, disease severity scoring and running large experiments and bioassays. She is currently tutoring in Biological Systems labs at Griffith University along with running the very last PhD related experiments.

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