

## Exploiting the genetic resources generated through the NSERC-CRD project to develop breeding tools for anthracnose resistance screening in lentil

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SPG Contributions	Project Status	Duration/Timeline of Project (Year to Year)	Total Project Cost
\$31,740.00	Completed	May 2011 – August 2012	\$31,740.00

### Project Description

To confirm the function of a number of genes in the anthracnose fungus, *Colletotrichum truncatum*, that have been identified and are believe to be involved in virulence of the fungus; to systematically screen the library of genes activated by the lentil plant during the infection process and identify defense genes that can be exploited for resistance breeding; to screen germplasm currently identified as parents in crosses for the presence of those defense-related genes, in particular in material that could potentially have resistance genes to the more aggressive race 0.

### Outcome

Potential genes directly involved in triggering resistance in lentil cultivars were identified. A repertoire of 25 effectors from *C. truncatum* and 87 intracellular receptors, which have the potential to be used for the screening lentil germplasm, were identified with 34 being identified as very good candidates for R-genes based on further bioinformatics analysis. Three markers that differentiated between the fully susceptible cultivar Eston and the partially resistant cultivar CDC Robin were identified. Genes that differentiate between race 0 and race 1 were identified.

### Research Objective

#### OBJECTIVE 1

To confirm the function of a number of genes in the anthracnose fungus, *Colletotrichum truncatum*, that have been identified and are believe to be involved in virulence of the fungus.

#### OBJECTIVE 2

To systematically screen the library of genes activated by the lentil plant during the infection process and identify defense genes that can be exploited for resistance breeding.

#### OBJECTIVE 3

To screen germplasm currently identified as parents in crosses for the presence of those defense-related genes, in particular in material that could potentially have resistance genes to the more aggressive race 0.