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Growth and development in *Arabidopsis thaliana*

The goal of this project is to determine the function of several receptor protein kinases in the plant *Arabidopsis thaliana*. *Arabidopsis thaliana* has genes coding for over 600 receptor protein kinases. This project focuses on four groups of leucine rich receptors (LRR), receptor like kinases (RLK): LRR VII, X, XI, and XIII containing a total of 61 genes. Out of the 61 genes six have functional roles in different stages of the plant growth and development. Each of the remaining genes has been mutated in order to define the phenotypes. However, no phenotypes have been found for the single gene mutation suggesting that the genes may have overlapping functions. Within each of the four groups of LRR RLKs double and triple mutants have or will be made in attempt to identify a change in phenotype. To create double and triple mutants the homozygous single mutants are planted and genotyped. DNA samples are taken from the plants and prepared for polymerase chain reactions (PCRs) which will amplify the DNA, therefore, allowing the detection of mutations when analyzed by gel electrophoresis. Once the homozygous mutants' genotypes are confirmed the plants are crossed to create the double mutants. A single homozygous mutant may be crossed with the double mutant to create a triple mutant. The plants are genotyped again to confirm the mutations are present and are observed for changes in phenotypes.

This project was completed as part of a Capstone requirement.