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Lectin-like receptor kinases in *Arabidopsis Thaliana*

Lectin-like receptor kinases (LecRKs) are specialized proteins encoded in many plant genomes. These proteins contain three distinct domains: an extracellular receptor domain, a transmembrane domain, and an intracellular kinase domain. Forty two LecRK genes have been identified in the *Arabidopsis thaliana* genome. However, to date no function has been ascribed to any of these genes. Bioinformatic data reveals that LecRKs are expressed not only in a variety of plant tissues but also at several different stages of plant development. We looked at this relatively large amount of data and decided to focus our efforts on investigating a single LecRK. Our intent is to characterize the localization, potential ligands, and function for this particular protein. To detect the cellular localization of this protein, we will use the strong 35S promoter to overexpress a LecRK-flag fusion gene construct that can be detected via confocal microscopy. We intend to express only the lectin portion of the LecRK and subject it to a carbohydrate array to determine potential ligands. Finally, we will use PCR-based mutagenesis to construct mutations in the intracellular kinase domain. Our hypothesis is that this transmembrane protein possesses an intracellular kinase activity that is critical for its normal function. We intend to not only demonstrate that the kinase domain is indeed required by this LecRK for normal function but also develop a protocol that can be used to study other LecRKs.