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# The search for a new gene: RPS6

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Plants are exposed to a wide variety of pathogens including viruses, bacteria, fungi, nematodes and protozoa. In response, plants have developed a plethora of strategies aimed at blocking infection by potential pathogens. One form of induced response is the hypersensitive response (HR), during which cells immediately surrounding the site of infection rapidly die. This interaction between these pathogens and plants is governed by the genetics of both organisms. The genes responsible for deterring infection are called disease resistance genes. In fact, disease resistance genes are employed to specifically recognize pathogens expressing cognate genes (appropriately called the avirulence gene). Historically, this has been explained by the gene-for-gene hypothesis. This hypothesis predicts that if the pathogen carries an avirulence gene, which is "recognized" by a specific resistance gene in the plant, a plant resistance response is induced. If either the avirulence gene or the resistance gene is absent, then the pathogen causes disease on the plant. In many cases, control of disease resistance conforms to the gene-for-gene hypothesis. I have been pursuing the identification, and mapping of a new disease-resistance gene, *RPS6* , which has been named by our lab as the " *hopPsyA* project". I have been screening *Arabidopsis* plants to isolate mutants, and I have thus far isolated two true mutants with the desired trait. I have also sequenced the *eds1* gene in two of these mutants. Because the *eds1* gene is already known to be required for *RPS6* function, verifying that the mutation is not in the eds1 gene (which our results confirm) gets us one step closer to indicate that the mutation is most probably in the *RPS6* gene. I am further focusing my project on narrowing down the location of the gene responsible for the desired trait and have crossed one of my mutants to a resistant line.