

## Identification of Novel Genes in the PBS<sub>3</sub>-mediated Pathogen Resistance Pathway in *Arabidopsis thaliana* Using a Suppressor Screen

PBS<sub>3</sub> is an important defense pathway protein in the model plant *Arabidopsis thaliana*. Plants with mutations in the PBS<sub>3</sub> gene are compromised in the accumulation of the key plant defense hormone, salicylic acid (SA), and therefore are more susceptible to many plant pathogens. The mechanism by which PBS<sub>3</sub> contributes to SA accumulation is unknown.

In this project, we will use a genetic suppressor screen to identify novel genes in the PBS<sub>3</sub>-mediated pathogen resistance pathway. The mentee will screen thousands of mutagenized PBS<sub>3</sub> plant lines for plants with defense restoration. The mentee will then further characterize these lines, contributing to our knowledge of plant resistance to pathogens.



Becky Mackelprang  
Ph.D. candidate, Plant & Microbial Biology

I have just completed my third year of graduate school in the Department of Plant & Microbial Biology. I began mentoring undergraduates and early-stage graduate students for the first time this academic year. Concurrently, I became a Peer Mentor in my Department's inaugural year of our Peer Mentoring Program. I enjoyed these experiences and grew from them. However, without any formal training in mentoring in research, I felt that I was not creating the best possible experience for my mentee or for myself. I wanted training and practice in mentoring and as such, was thrilled to be accepted as a SMART mentor.

Through my participation in the SMART program, I have learned and continue to learn a great deal about the roles of a mentor and the different aspects of supporting and advocating for mentees. Empathic by nature and eager to develop positive relationships, I am drawn to opportunities to mentor and will incorporate mentoring into my long-term professional goals and development. In addition to moving exciting research forward, I hope to use this summer of mentoring and the insight I gleaned from the SMART class this spring as a foundation for future successful mentoring relationships.



Román Ramos  
Senior, Genetics and Plant Biology

I'm a fourth year Genetics and Plant Biology major in the College of Natural Resources. My interest in this project stems from my interest in plant pathogenesis and genetic circuits. This project works with enzymes involved in the accumulation of salicylic acid (SA), an important hormone that regulates plant defense, which I've had the opportunity to research in the past. I hope that SMART will allow me to further research SA while gaining new knowledge of research tools as well as on salicylic acid function and regulation itself. I also hope that being a SMART mentee will help me to connect with plant and microbial biology faculty.

Through my participation in the SMART program, I hope to gain a deeper understanding of the pathways governing salicylic acid activity, and the procedures involved in carrying out a suppressor screen and other relevant research tools. Most importantly, I would like to become better prepared for a graduate school career both directly through SMART workshops as well as through advice from the faculty in my department.

UC Berkeley's Student Mentoring And Research Team (SMART) is a paid professional development program that engages doctoral students in creating mentored research opportunities conducted with selected undergraduate student mentees during a ten-week period over the summer. Both participants receive compensation and training throughout their participation. SMART broadens the professional development of doctoral students and fosters research skills and paths to advanced studies for undergraduates.

Expenses associated with each team total \$10,000,000 (\$5K graduate stipend/\$3.5K undergrad stipend/\$1.5K research and conference costs). As a donor-supported program of the Graduate Division, the majority of teams are underwritten through a combination of donor funds paired with matching support courtesy of the Graduate Division.

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