

Nelson (Yale University).

CALIFORNIA STATE SCIENCE FAIR 2002 PROJECT SUMMARY

Name(s) **Project Number** Sabina R. Bera 22792 **Project Title** Systemic Acquired Response and Mutant Vascular Tisspe Patterns in Arabidopsis thaliana **Abstract** Objectives/Goals Local infection with a pathogen can render plants to become resistant to normal This biological response is known as systemic acquired response (SAR). This study tested whethet varying vascular tissue patterns in Arabidopsis thaliana will affect the plant's ability to respond to SAR when it is infected by a pathogen. Methods/Materials Several mutant vein patterns were stained and Mutants 3 and 117 were chosen. Arabidopsis plants were injected with avirulent Pseudomonas syringae (bacteria) on three lower leaves in the primary inoculation. Two days later, virulent Pseudomonas syringae was injected on three upper leaves in the secondart inoculation. After three days, the leaves were crushed, diluted, plated, and later counted under a sterile hood. This process was repeated with both mutant plant lines. **Results** Both mutants showed a tendancy towards developing a strong systemic acquired response resulting t lower bacteria counts, whereas the Columbia Will type plants (control plants) showed a tendency tt develop more infections. **Conclusions/Discussion** The hypothesis seems to be correct. The proven below is the dispersed vein patterns of the mutant plants favorably affected the plant's SAR to Pseudomonas syring. These mutant vein patterns may result in higher crop yields. Summary Statement ant vein pattern may affect the ability of a plant to defend itself from pathogens when infected in one leaf. Help Received Used lab equipment at the University of California, Riverside under the supervision of Dr. Linda Walling, professor in the Department of Botany and Plant Sciences. Acquired Mutant vein patterns from Timothy