



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Sophia D. Lin	Project Number S1713
Project Title How Plants Respond to Ultraviolet Light	
Abstract Objectives/Goals Plants rely on photosensory receptors to mediate light regulation of growth and development. The photoreceptors and the signaling proteins responsible for plant perception of visible light (~400-700nm) are relatively well understood, but those responsible for UV (ultraviolet) light (~150-400nm) are poorly understood. I aim to better understand how plants respond to UV light. Methods/Materials I analyzed the effects of UV light on hypocotyl seedling growth in the model plant <i>Arabidopsis thaliana</i> and I have used molecular genetic approaches to identify three genes involved in this response. Results The red/far-red light (~600-700nm) photoreceptor phyA and the visible light downstream signaling protein HY5 are both involved in UV-A light (~320nm-400nm) response in plants, and the novel gene LSD1 (light signaling and development 1) is involved in UV-B light (~280nm-320nm) response in plants. Conclusions/Discussion Red/far-red light photoreceptor phyA can act as a UV-A photoreceptor. The transcription factor HY5, previously known to be involved in visible light response, is also involved in UV-A signal transduction. The LSD1 gene encodes a putative RING-finger E3 ubiquitin ligase involved in UV-B signal transduction. Continued studies of these genes will help us understand how plants respond to UV light, and thus help us react effectively to the increasing amount of UV rays penetrating the atmosphere due to the depletion of the ozone layer.	
Summary Statement I have studied <i>Arabidopsis</i> UV light response and cloned three genes involved in the process.	
Help Received My mentors were Dr. Xuhong Yu and Dr. Hongtao Liu and I used lab equipment in Dr. Chentao Lin's laboratory in Department of Molecular Cell and Developmental Biology at UCLA.	