Albany State University

Faculty Capabilities and Interests

Name:	Byunghoon (Brian) Kim, Ph.D.
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Discipline:	Molecular Genetics
Subdiscipline(s):	Gene expression in plants
Areas of Research Interests:	Crosstalk among environmental factors
Skills:	Various molecular biological techniques
Research Summary *(current, performed in the past 5 year; 300 words or less)*	Plants are exposed to an environment in which multiple environmental factors fluctuate independently. Among them environmental stress responses and light responses are two most intensively studied responses owing to their importance in survival and productivity. Despite the information accumulated so far, independent and separate understanding of those responses did not fully support our effort to improve the survival and productivity of crop plants. Circumstantial evidences suggest that the crosstalk among different environmental signals in the plant limits our understanding on real responses to the complex environment in the field. However, current knowledge on the mechanism of the interaction between those responses is very limited. To lay the foundation of a long term research, my current project is directed toward identifying the molecular and physiological crosstalk between the regulation of plant growth by light and the responses to the environmental stress factors. A systematic study on the integration of light and temperature signals has been carried out to establish a model system for exploring signal integration mechanisms. The long-term goal and the potential application of this project is to facilitate the breeding of crop plants for improved environmental stress tolerance by uncovering how enhancement in specific trait constrains other responses. The information obtained from this project will strengthen our knowledge on plant survival and productivity in preparation for global climate change and food shortage in the future.
Keywords *(5 maximum)*	plant, gene expression, crosstalk, light, temperature